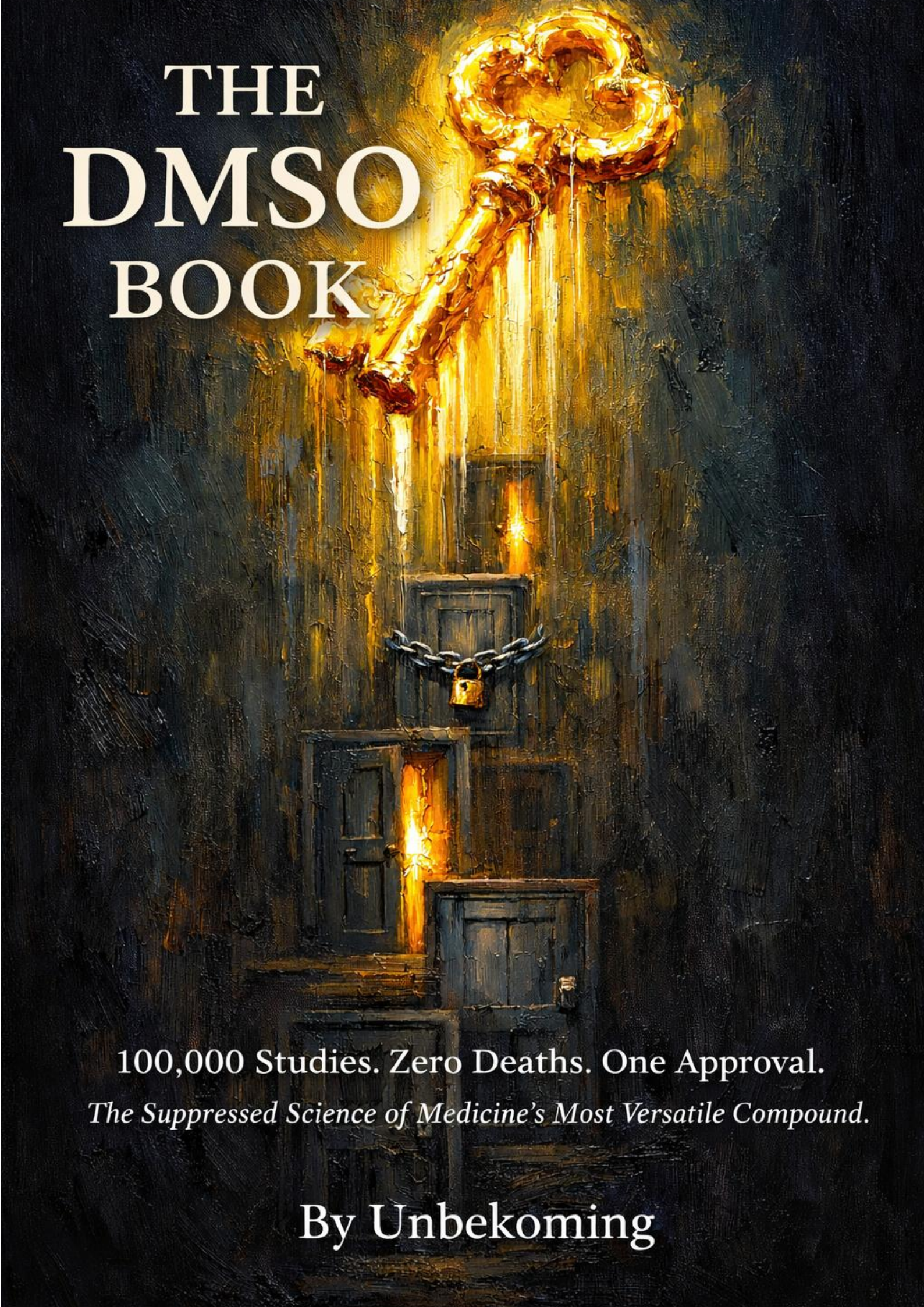
THE DMSO BOOK



100,000 Studies. Zero Deaths. One Approval.

The Suppressed Science of Medicine's Most Versatile Compound.

By Unbekoming

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Readers are encouraged to consult qualified healthcare professionals regarding individual medical decisions. The author assumes no responsibility for any actions taken based on the information contained herein.

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Contents

How to Use This Book 4
Introduction 6
The Master Key: How DMSO Combination Therapies Are Revolutionizing Medicine 10
The DMSO Handbook: A Practical Guide to its Uses and Applications 44
DMSO Nature's Healer 78
Healing with DMSO 94
The Magic of DMSO 110
The DMSO Handbook for Doctors 120
Cellular Resurrection: How DMSO Transforms Cancer Treatment 142
Appendix A: Conditions Index 170
Appendix B: Quick-Reference Dosage and Concentration Guide 177
Appendix C: Glossary 184
Appendix D: Bibliography and Further Reading 190

How to Use This Book

This book compiles six sources on DMSO into a single volume. Each source was originally a standalone Substack post — a complete summary with its own introduction, key points, and question-and-answer section. They were written to be read independently, and they still can be.

That means you have two ways in.

If you have a specific condition or question, go to Appendix A (Conditions Index) and find your entry. It will point you to every section and question number where that topic is covered. For dosage and preparation questions, go to Appendix B (Dosage and Concentration Guide). For unfamiliar terms, go to Appendix C (Glossary).

If you want the full picture, read front to back. The sections are ordered to build understanding progressively: combination therapies first, then the broad clinical handbook, then the historical and scientific foundation from three different authors, then reader experience, then the clinical handbook for doctors, and finally the dedicated cancer section.

On repetition. Because each source was written to stand alone, certain material appears more than once. The discovery story — Zaytsev, Herschler, Jacob, Crown Zellerbach — is told in five of the six sections. The FDA's suppression of DMSO research appears in all of them. The safety profile is restated throughout. This is intentional. Each author brings different details, different emphasis, and different implications to the same events. A reader moving through the full book will find this reinforcing rather than redundant — the consistency of the account across independent sources is itself a form of evidence. A reader dipping into a single section will find it self-contained.

Section overview:

The Master Key — DMSO combination therapies. How DMSO works with antibiotics, chemotherapy, steroids, anaesthetics, antifungals, magnesium, ivermectin, and other agents. The most clinically detailed section. 50 Q&As.

The DMSO Handbook: A Practical Guide — The broadest overview. Covers the science, the history, and the regulatory story, plus practical guides on the top five uses, pets, buying DMSO, infections, dilution, chronic pain, dental uses, burns, and eye conditions. 50 Q&As.

DMSO Nature's Healer — Dr Morton Walker's 1993 book, covering DMSO's discovery, therapeutic properties, the political war against it, and clinical applications across 35 conditions. 35 Q&As.

Healing with DMSO — Amandha Dawn Vollmer's practical guide. Strong on molecular science, preparation methods, safety protocols, concentration guidelines, and veterinary applications. 44 Q&As.

The Magic of DMSO — First-person account from klimer, a melanoma survivor. Covers vestibular problems, gout, back and knee pain, varicose veins, cherry angioma, tendonitis, hair quality, and DMSO sources. Experience-based rather than research-based.

The DMSO Handbook for Doctors — Archie H. Scott's clinician-oriented text. Covers emergency medicine, stroke treatment, neurological conditions, cancer enhancement, mental health, and the full legal landscape. 50 Q&As.

Cellular Resurrection — AMD's deep dive into DMSO and cancer. Cellular differentiation, immune system enhancement, combination therapies, chemotherapy potentiation, metastasis prevention, and the regulatory suppression of cancer research. 50 Q&As.

Total: Nearly 330 questions and answers across seven sections, plus practical guides and first-person experience.

Introduction

Between 50,000 and 100,000 studies have been published on dimethyl sulfoxide. Not one of them has linked it to a single human death. NSAIDs kill tens of thousands of Americans every year. Opioids kill tens of thousands more. DMSO — zero. Over sixty years. Millions of users.

The FDA approved it for exactly one condition.

That fact alone should stop you. It stopped me. And it's what sent me down the path that eventually became this book.

I run a Substack called Unbekoming, where I summarise books and research that mainstream medicine would rather you didn't read. Over the past couple of years, DMSO kept surfacing — in reader comments, in the work of A Midwestern Doctor (AMD), in older texts I was pulling off shelves. The more I read, the harder it became to understand how a compound this well-documented, this safe, this versatile could remain this obscure. Then I remembered what business I was in — documenting exactly this kind of thing — and it made perfect sense.

This book is a compilation. It draws from six major sources, each of which I've synthesised into a structured question-and-answer format with my own summaries and commentary. The sources are:

A Midwestern Doctor's DMSO series — the most comprehensive modern treatment of the subject, originally a multi-part Substack series running to roughly 90,000 words, later collated by Dr Robert Yoho. AMD's work forms the backbone of this book. Three sections draw directly from it: *The Master Key* (on combination therapies), *The DMSO Handbook: A Practical Guide* (the broadest clinical overview), and *Cellular Resurrection* (on cancer applications).

DMSO Nature's Healer by Dr Morton Walker (1993) — the foundational popular text on DMSO, covering its discovery, its properties, and the political war waged against it.

Healing with DMSO by Amandha Dawn Vollmer — a practical guide with particular strength in preparation methods, safety protocols, and therapeutic applications across body systems.

The DMSO Handbook for Doctors by Archie H. Scott — written for clinicians, covering emergency medicine applications, neurological uses, and the legal and regulatory landscape.

The Magic of DMSO by klimer — something different entirely. This is a first-person account from a reader and melanoma survivor who has used DMSO extensively on himself, his wife, his friends, and his dog. Where the other sources give you research and protocols, klimer gives you lived experience.

That's the architecture. Here's how to use it.

Each section can stand alone. If you have a specific condition — chronic pain, an eye problem, a skin issue, a cancer diagnosis — you can go directly to the relevant Q&As and find concentrated, practical information. The conditions index in the appendix will point you to every mention across all six sources.

If you want the full picture, read front to back. You will notice overlap. The same history — Alexander Zaytsev's 1866 synthesis, Robert Herschler's lab accident at Crown Zellerbach, Stanley Jacob's breakthrough at Oregon Health Sciences University — gets told more than once. The FDA's sabotage of DMSO research appears in every section because it is relevant to every section. I chose to keep this repetition rather than edit it out, for two reasons. First, each author brings different details and emphasis to the same events, and the cumulative effect is more complete than any single telling. Second, many readers will dip into one section at a time. The overlap ensures each section makes sense on its own terms.

A few patterns will emerge as you read across the sources.

The safety data is remarkably consistent. Human studies at 3 to 30 times the standard dosage showed no toxicity. The compound was tested on over 100,000 patients before the FDA shut down research. The only basis for the FDA's restrictions — lens changes in laboratory animals given extreme doses — never occurred in a single human subject, and was reversible even in the animals.

The clinical results are broad enough to trigger scepticism. DMSO treats chronic pain, burns, strokes, autoimmune conditions, antibiotic-resistant infections, eye diseases, cancer — the list goes on. In conventional medicine, a substance that claims to do this many things is usually doing none of them. DMSO is the exception, and the reason is mechanistic: it operates at the level of cellular function, circulation, and membrane transport. It doesn't treat diseases. It restores the conditions under which the body can treat them itself. When you understand the mechanism, the breadth of application stops seeming implausible and starts seeming inevitable.

The regulatory picture is as clear as it is damning. The FDA demanded continuous eye monitoring for all DMSO trials — a requirement so financially prohibitive it functioned as a research ban. While DMSO itself remained effectively blocked, the same agency approved numerous pharmaceutical products containing DMSO as a "safe and inert ingredient." The compound was simultaneously too dangerous to study and safe enough to sell, so long as a patentable drug was attached. A 1975 study found that low-dose cyclophosphamide mixed with DMSO cured 57 of 65 patients with incurable cancers. A 2002 clinical trial showed 63% of acute stroke patients treated with DMSO within 12 hours achieved improved or markedly improved neurological status, compared to 20% with standard treatment. A 2021 study found that adding DMSO to chemotherapy cut bladder cancer relapse rates by approximately 50%. These are not fringe results from fringe journals. They are published, documented outcomes that the regulatory system chose not to pursue.

The combination therapy evidence is where this book offers something no single source provides. AMD's work on DMSO combinations — with antibiotics, with chemotherapy agents, with local anaesthetics, with magnesium, with ivermectin, with antifungals — demonstrates that DMSO's real power isn't as a standalone treatment. It's as a potentiator and transport system that makes other therapies work better, at lower doses, with fewer side effects. DMSO mixed at just 5% with doxorubicin produced a 7 to 12-fold increase in drug concentration at the tumour site while reducing the required chemotherapy dose by 44%. That single finding, if pursued, could have transformed oncology. It wasn't pursued.

A word about what this book is not. It is not medical advice. I'm a reader and a synthesiser, not a doctor. If you think medical care can be run out of a Substack — or a book compiled from one — you are mistaken. What this book offers is information: sourced, structured, and presented with enough context to let you make your own decisions and have better conversations with whatever practitioners you trust.

I will steal Dr Robert Yoho's framing here, because it is honest: *If you yearn for a day when common sense will replace Rockefeller medicine, join the club*.

What follows is, as far as I know, the most comprehensive single-volume treatment of DMSO available to a general reader. It covers the science, the history, the politics, the practical protocols, the lived experience, and the cancer applications. Six sources. Nearly 300 questions and answers. Decades of suppressed research, synthesised and made accessible.

The compound has been studied for over sixty years. It has been used by millions. It has killed no one. And most doctors have never heard of it.

That's the starting point. The rest is in the pages ahead.

The Master Key: How DMSO Combination Therapies Are Revolutionizing Medicine

By A Midwestern Doctor – 50 Q&As

In the intricate landscape of modern “cartel” medicine, where treatments are often just heavy-handed interventions that address symptoms while sidestepping root causes, dimethyl sulfoxide (DMSO) emerges as a singular anomaly—a “master key” capable of unlocking the body’s latent healing potential. As detailed in this latest comprehensive exploration by A Midwestern Doctor (AMD), DMSO’s ability to penetrate biological membranes, enhance circulation, reduce inflammation, and transport therapeutic agents directly to affected tissues redefines medical possibility. This natural compound, with over 50,000 studies attesting to its safety and efficacy, transcends the limitations of conventional therapies, which often rely on invasive methods or symptom-masking drugs that risk collateral damage. The tragedy, however, lies in its suppression by regulatory bodies, a point echoed in The DMSO Handbook, which notes how “institutional barriers have sidelined a therapy with unmatched versatility.” Yet, an underground community of researchers and clinicians, as highlighted in The DMSO Handbook for Doctors, has preserved and advanced DMSO’s applications, developing combination therapies that address conditions from chronic pain to antibiotic-resistant infections. These combinations can amplify efficacy while reducing toxicity, offering a paradigm shift toward restorative healing.

The transformative potential of DMSO lies not only in its standalone properties but in its synergistic combinations, which, as AMD illustrates, achieve outcomes unattainable by individual agents. Healing with DMSO underscores its role in treating “untreatable” eye conditions like macular degeneration through 3% isotonic drops, restoring vision where conventional medicine falters. These applications, grounded in decades of rigorous research, reflect a chronological progression from Stanley Jacob’s pioneering work in the 1960s to modern protocols developed by figures like Hartmut Fischer. Yet, the regulatory embargo has relegated such breakthroughs to the margins, forcing patients to seek relief through unofficial channels.

With thanks to A Midwestern Doctor.

Therapeutic DMSO Combinations Revolutionize Medicine

The Master Key Analogy

Imagine your body as a vast, intricate mansion with thousands of rooms, each representing different organs, tissues, and cellular functions. Over time, many doors in this mansion become stuck, locked, or blocked—representing poor circulation, inflammation, scar tissue, and cellular dysfunction that prevent your body's natural healing mechanisms from working properly.

Conventional medicine typically works like a maintenance crew that focuses on individual rooms, using sledgehammers and crowbars (harsh drugs and surgeries) to force open specific doors, often causing damage to surrounding walls and structures in the process. While sometimes necessary, this approach treats symptoms rather than addressing why the doors became stuck in the first place.

DMSO is like discovering a master key that can gently unlock nearly every door in the mansion, restoring natural flow and function throughout the entire structure. But the real magic happens when you combine this master key with the right tools—DMSO doesn't just unlock doors, it can carry repair materials, cleaning supplies, and renovation equipment directly to where they're needed most. A combination therapy is like having both the master key and a team of skilled craftsmen who can finally reach every room to perform the repairs that have been needed for years.

The tragedy is that despite decades of evidence proving this master key works safely and effectively, the mansion's management company (regulatory agencies) has largely banned its use, instead only allowing expensive, patented key-and-tool combinations that accomplish far less while generating massive profits for the management company's preferred contractors.

The One-Minute Elevator Explanation

You know how when you get injured or sick, your body often struggles to heal properly because medications can't reach the problem areas and circulation gets compromised? Well, there's this remarkable natural compound called DMSO that acts like a biological transport system—it can penetrate through skin and carry healing substances directly to wherever they're needed in your body, often turning topical applications into systemic treatments.

What makes DMSO revolutionary is that it doesn't just deliver other substances—it has its own powerful healing properties. It reduces inflammation, improves circulation, helps dying cells recover, and appears to address the root causes of many diseases rather than just masking symptoms. The real breakthrough comes when you combine

DMSO with other therapeutic agents, creating treatments that can accomplish what neither substance could do alone.

Despite being one of the most studied substances in medical history with an excellent safety profile, DMSO has been largely suppressed in the United States due to regulatory politics, even though the same agencies approve numerous pharmaceutical products containing DMSO. Meanwhile, an underground community of physicians and researchers worldwide has spent decades developing innovative DMSO combination therapies that have successfully treated everything from chronic pain and antibiotic-resistant infections to cancer and degenerative eye diseases.

The potential is staggering—we're talking about treatments that could revolutionize medicine by enhancing the body's natural healing mechanisms rather than suppressing symptoms. From restoring vision and treating untreatable infections to overcoming chemotherapy resistance and healing chronic pain, DMSO combinations represent an entirely new paradigm in healthcare.

[Elevator dings]

If you want to learn more, research "Stanley Jacob DMSO" for the pioneering medical research, or look into "DMSO combination therapies" to understand the innovative protocols being developed worldwide. You might also investigate "pharmaceutical DMSO products" to see how the substance is already being used successfully in approved medications.

12-Point Summary

1. DMSO as a Revolutionary Medical Transport System: DMSO represents a unique therapeutic breakthrough—a natural compound that can penetrate biological membranes without damage, rapidly distribute throughout the body, and carry other healing substances with it. Unlike any other known substance, it can transport medications through skin, into deep tissues, and even across the blood-brain barrier, essentially turning topical applications into systemic treatments. This transport capability allows medications that normally require painful injections to be applied to the skin, while simultaneously reducing the doses needed for therapeutic effect.

2. Extraordinary Safety Profile Despite Regulatory Suppression: Despite being one of the most extensively studied substances in medical history with 50,000-100,000 published studies, DMSO has been systematically suppressed by U.S. regulatory agencies based on reversible vision changes in dogs that never occurred in humans. The FDA's restrictions created an effective embargo on research

just as breakthrough results were emerging, yet the same agencies approve numerous pharmaceutical products containing DMSO as a "safe and inert ingredient." This regulatory contradiction has deprived patients of a therapy with remarkable safety and minimal side effects when used properly.

3. Proven Effectiveness Across an Unprecedented Range of Conditions: Clinical studies and decades of practical use have demonstrated DMSO's effectiveness for strokes, paralysis, chronic pain, autoimmune diseases, infections, cancer support, vision problems, and tissue injuries. The scope is so broad it seems impossible, yet the mechanism makes sense—DMSO appears to address fundamental problems in cellular function, circulation, and tissue repair that underlie many different diseases. Rather than suppressing symptoms like most medications, DMSO helps restore normal cellular function and promotes actual healing.

4. Combination Therapies Unlock Exponential Therapeutic Potential: While DMSO alone is remarkably effective, its true power emerges when combined with other therapeutic agents. These combinations can treat conditions that neither substance could address alone, often with dramatic improvements in both safety and efficacy. Proven combinations include DMSO with antibiotics for resistant infections, with chemotherapy for cancer, with local anesthetics for chronic pain, with magnesium for injuries, and with various natural substances for countless applications. The combination approach represents an entirely new paradigm in medicine.

5. Eye Treatment Protocols Restore Vision and Prevent Degeneration: DMSO eye drops at 3% concentration in isotonic saline have successfully treated cataracts, glaucoma, macular degeneration, and numerous other eye conditions considered incurable by conventional medicine. Users report restored vision, reduced need for glasses, and reversal of age-related decline. The treatment works by improving circulation, reducing inflammation, and helping clear accumulated deposits from eye tissues. Even more remarkably, experimental combinations have achieved night vision enhancement far beyond normal human capabilities.

6. Neural Therapy Enhancement Treats Root Causes of Chronic Illness: DMSO dramatically enhances neural therapy—a German medical approach that treats problematic scars which disrupt the nervous system and cause chronic health problems. By combining DMSO with local anesthetics like procaine, practitioners can reset dysfunctional nerve patterns without painful injections, often resolving complex chronic conditions by addressing their true underlying cause.

This approach has successfully treated chronic pain, autoimmune conditions, circulatory problems, and numerous other issues that conventional medicine struggles to understand or treat.

7. Infection Treatment Overcomes Antibiotic Resistance: DMSO combinations have successfully treated antibiotic-resistant infections by both enhancing drug penetration and actually removing bacterial resistance. Studies show DMSO can make resistant tuberculosis susceptible to standard antibiotics, enhance treatment of resistant urinary tract infections, and eliminate superbugs that don't respond to conventional therapy. This capability could address one of medicine's most pressing challenges—the growing crisis of antibiotic-resistant infections that threaten to return us to a pre-antibiotic era.

8. Cancer Applications Show Remarkable Promise: DMSO enhances chemotherapy effectiveness while reducing toxicity, concentrates preferentially in tumor tissues, and shows synergistic effects with various cancer treatments including photodynamic therapy, ivermectin protocols, and novel approaches using dyes like hematoxylin. Clinical studies have shown dramatic improvements in cure rates and reduced side effects when DMSO is combined with conventional cancer therapies. The ability to apply cancer treatments topically rather than systemically could revolutionize treatment by targeting tumors directly while minimizing damage to healthy tissues.

9. Sourcing and Preparation Require Careful Attention to Quality: High-quality pharmaceutical-grade DMSO from reputable sources like Jacob Lab, The DMSO Store, or Nature's Gift is essential for therapeutic applications. The compound should be stored in glass containers to prevent plastic leaching, and proper dilution with isotonic solutions creates the most effective and comfortable preparations. Understanding concentration guidelines—starting with 30-50% topically and building tolerance gradually—prevents adverse reactions while maximizing therapeutic benefit. Sterilization requires specialized filtration rather than conventional methods due to DMSO's reactive properties.

10. Underground Community Has Preserved and Advanced the Science: A dedicated worldwide network of physicians, researchers, and advocates has kept DMSO research alive despite official suppression, developing innovative combination therapies and practical protocols that would have been impossible within conventional medical institutions. This community, particularly groups in Germany led by researchers like Hartmut Fischer, has systematically explored DMSO combinations and maintained rigorous scientific standards while sharing their discoveries freely. Their work represents decades of accumulated wisdom that has

helped thousands of people access healing that conventional medicine couldn't provide.

11. Regulatory Politics Override Scientific Evidence: The stark contrast between DMSO's availability in different countries reveals how regulatory politics rather than scientific evidence determines medical access. While European countries widely sell DMSO products and incorporate them into approved medications, American patients are largely denied access despite extensive safety data. The same regulatory agencies that ban DMSO approve it as a component of patented drugs, creating an absurd double standard that prioritizes pharmaceutical profits over patient welfare and scientific evidence.

12. Future Potential Could Transform Medicine: DMSO represents just the beginning of what's possible when we understand how to enhance the body's natural healing mechanisms rather than simply suppressing symptoms. Future research directions including regenerative medicine applications, novel drug delivery systems, neurological enhancement, and systematic exploration of natural combination therapies could revolutionize treatment for conditions currently considered incurable. The underground community's decades of practical experience provides a rich foundation for formal research that could transform medicine if institutional barriers can be overcome.

50 Questions and Answers

1. What is DMSO and why is it considered an "umbrella remedy" for treating various medical conditions?

Dimethyl sulfoxide (DMSO) is a natural compound derived from wood pulp that has been extensively studied for its therapeutic properties since the 1960s. It's considered an "umbrella remedy" because of its unique combination of therapeutic mechanisms that address fundamental causes of disease, including reducing inflammation, improving circulation, regenerating senescent cells, increasing parasympathetic activity, and blocking pain conduction. This diverse range of biological activities allows DMSO to effectively treat conditions spanning from strokes and neurological disorders to chronic pain, infections, and even certain cancers.

The umbrella designation reflects DMSO's ability to treat a remarkably wide spectrum of challenging ailments that often don't respond well to conventional therapies. Studies have documented its effectiveness for tissue injuries, autoimmune conditions, circulatory disorders, skin diseases, infectious conditions, and various aspects of cancer treatment. What makes DMSO particularly valuable is that it appears to work on multiple therapeutic pathways simultaneously, often providing relief

where single-mechanism drugs fail, which explains why it has generated such intense interest despite regulatory obstacles.

2. How does DMSO function as a vehicle to transport other substances through biological membranes?

DMSO possesses unique molecular properties that allow it to pass through biological membranes without damaging them, a capability that's extremely unusual among chemical compounds. This occurs because DMSO can exchange and interchange with water in biological membranes due to its small molecular size, ability to form hydrogen bonds, and polar nature. Once DMSO contacts the skin, it rapidly spreads throughout the body, reaching bones and teeth within an hour, while simultaneously dissolving and carrying along whatever substances are mixed with it.

The transportation mechanism works because DMSO is both fat and water soluble, allowing it to change cell membrane permeability by taking the place of water molecules. This creates pathways for new substances to enter cells while enabling waste products to exit more efficiently. DMSO's effectiveness as a vehicle increases with higher concentrations, though sometimes 90% DMSO proves more effective than 100% for certain applications. This unique transport capability has made DMSO invaluable in pharmacology, often proving superior to other penetration enhancers like propylene glycol for delivering topical medications into the body.

3. What are the molecular size limitations for substances that DMSO can transport through the skin?

Current research indicates that DMSO can reliably transport substances smaller than 500 Daltons through the skin, with potentially limited transport capability for molecules between 500-1000 Daltons. However, the exact carrying limit hasn't been definitively established, and evidence suggests the actual threshold may be higher than commonly reported. For context, aspirin weighs 180.16 Daltons and prednisone weighs 358.43 Daltons, both well within DMSO's transport range, while insulin at 5,808 Daltons is too large for skin penetration.

Interestingly, some studies suggest DMSO can transport larger molecules than the theoretical 500 Dalton limit. Heparin, which typically weighs 12,000-15,000 Daltons, has been successfully transported through skin when mixed with DMSO, leading to therapeutically active results in clinical studies. This discrepancy suggests either the size limit is incorrect, heparin's extremely negative charge enhances DMSO's transport capability, or previous studies attributed benefits incorrectly. Additionally, DMSO's carrying capacity appears much higher inside the

body, with evidence suggesting it can transport molecules larger than 70,000 Daltons through the blood-brain barrier when administered intravenously.

4. What safety precautions must be taken when applying DMSO to ensure contaminated substances aren't absorbed?

The most critical safety precaution when using DMSO is thoroughly cleaning the application area beforehand, as DMSO will rapidly transport any substance present on the skin into the body. Historical incidents demonstrate this risk, including a researcher who suffered temporary impaired consciousness and breathing difficulties after DMSO transported toxic pesticides through his skin, and cases where individuals experienced nicotine overdose when DMSO was applied over nicotine-contaminated skin. Despite these dramatic examples, no serious illnesses have been reported from applying DMSO to skin containing typical contaminants, suggesting either users have been consistently diligent about cleaning or the risk is limited to highly toxic substances.

Beyond skin preparation, users must be cautious about the purity of substances mixed with DMSO, as impurities that might be harmless alone can become dangerous when transported into the body. This is particularly important when using pharmaceutical preparations, as many contain multiple ingredients beyond the primary active compound. The bidirectional nature of DMSO as a "channel opener" may actually provide some protection by facilitating the excretion of potentially harmful substances, but this doesn't eliminate the need for careful preparation and application protocols.

5. How does DMSO potentiate pharmaceutical drugs and what timing considerations are important?

DMSO significantly increases the potency of many pharmaceutical drugs through several mechanisms, primarily by enhancing their delivery to target sites in the body and increasing cellular penetration. This potentiation is strongest when DMSO and drugs are taken simultaneously, particularly in intravenous infusions, but becomes much less pronounced when there's a two-hour separation between administrations. The enhanced delivery allows therapeutic concentrations to be achieved with lower doses, which is particularly valuable for toxic medications where high systemic doses are normally required to ensure adequate amounts reach the target tissue.

The timing consideration of maintaining at least a two-hour gap between DMSO and other medications serves as a safety buffer to minimize unwanted potentiation effects. However, this separation isn't always

necessary or desired, as DMSO's potentiation can be therapeutically beneficial, allowing for dose reductions of toxic drugs while maintaining effectiveness. Patients taking medications alongside DMSO should start with lower DMSO doses and gradually increase while monitoring for enhanced drug effects, potentially requiring dosage adjustments of their existing medications. The most significant potentiation risks involve alcohol, barbiturates, insulin, certain opioids, and some antibiotics.

6. Which drugs have been shown to have dangerous interactions with DMSO?

The most problematic interactions occur with alcohol and barbiturates, which become significantly more potent when combined with DMSO. Clinical trials in the 1960s documented cases where people consuming cocktails after DMSO treatment became extremely intoxicated, and studies showed DMSO increased alcohol's cognitive impairment and lethality in animals, particularly when DMSO was taken an hour before alcohol consumption. Barbiturates showed similar dangerous potentiation, suggesting benzodiazepines might present comparable risks, though this hasn't been thoroughly studied.

More serious concerns arise with certain antibiotics, particularly fluoroquinolones, sulfonamides, and macrolides, where approximately 4 out of 10,000 patients experienced significant adverse reactions when taking these concurrently with DMSO. These reactions included circulatory problems, dizziness, generalized allergies, and hematomas, with fluoroquinolones causing the most severe responses. Additionally, unspecified IV combinations of DMSO with anticoagulants or steroids have reportedly caused serious illness, though this may have resulted from the intravenous route rather than the drug combination itself. For highly toxic drugs like gadolinium contrast agents, concurrent DMSO use is generally discouraged due to the risk of enhanced toxicity.

7. What materials should be avoided when preparing or storing DMSO due to leaching concerns?

Several plastic materials should be avoided when working with DMSO due to their potential for leaching harmful compounds. Polycarbonate, polystyrene, styrene-acrylonitrile, and polyvinyl chloride are particularly problematic and should not contact DMSO, especially at higher concentrations. The leaching risk is concentration-dependent, with minimal concerns below 20% DMSO concentration according to the DMSO community, though one study suggested concentrations below 80% don't quickly leach plastic, and below 55% don't leach during long-term storage.

Safe alternatives include glass containers, which are always preferred for DMSO storage, along with certain DMSO-resistant plastics like polyethylene, polytetrafluoroethylene, and Teflon. HDPE plastic specifically doesn't react with DMSO and can be used when plastic containers are necessary. For medical applications, glass pipettes with rubber components are generally DMSO-resistant. When plastic contact is unavoidable, pre-treating containers with concentrated DMSO and washing them out can remove problematic surface additives like phthalate plasticizers and flame retardants. For injection applications, pre-diluted DMSO solutions are ideal to avoid direct contact between concentrated DMSO and plastic syringes or IV tubing.

8. How should patch testing be performed before using DMSO for the first time?

Patch testing involves applying a small amount of DMSO to a discreet area of skin to assess individual tolerance before broader application. Start by selecting a small, inconspicuous spot and applying a tiny amount of 30-50% DMSO solution. Leave the test application in place for 24 hours unless irritation develops sooner, during which time you should observe for any signs of allergic reaction such as swelling, excessive redness, or severe irritation beyond normal tingling sensations.

Normal responses to DMSO include mild itching, tingling sensations, and some irritation, which are considered typical reactions. However, if any signs of true allergic reaction develop, such as significant swelling or severe burning, the area should be washed immediately and DMSO use discontinued. This patch testing is particularly important because approximately 1 in 1,000-2,000 people may experience allergic reactions to DMSO. If the patch test shows good tolerance, you can proceed with confidence to use DMSO as intended, gradually building up from lower concentrations to higher ones as your skin adapts to the substance.

9. What are the recommended DMSO concentrations for different parts of the body?

DMSO concentrations should be tailored to the sensitivity of different body regions, with facial applications requiring the lowest concentrations at 25-35% to prevent irritation, though some experienced users gradually work up to 50% on the head. Arms, torso, and neck typically tolerate 40-70% concentrations, with 50% being a common starting point. Legs and feet, being less sensitive, can handle 50-80% concentrations, with 70% being the standard recommendation for most users.

Specialized applications require specific concentration considerations: wounds generally respond well to 40-60% concentrations, while

stubborn conditions like warts or boils may require stronger 75% applications. For sensitive skin anywhere on the body, starting at 30% is advisable regardless of location. Mucous membranes require much lower concentrations, with mouthwashes using 5-15% solutions, ear and nose drops typically at 15-40%, and other internal applications potentially as low as 10% due to high tissue permeability. Eye drops specifically should use isotonic 3% solutions, though some practitioners use concentrations up to 15% based on individual tolerance.

10. How should oral DMSO be dosed and what precautions are necessary?

Oral DMSO should always be heavily diluted to 20% concentration or less and taken slowly after eating a meal to minimize gastrointestinal irritation. The standard starting dose is 1-2 teaspoons of 70% or 100% DMSO mixed into an 8-ounce glass of water, creating a heavily diluted solution that's gentler on the digestive system. If this initial dose causes discomfort, reduce to half a teaspoon or even a quarter teaspoon and gradually build tolerance over time.

For therapeutic treatment, dosing can increase up to 6 teaspoons (~18 mL) twice daily, though exceeding 3 teaspoons in a single glass of water becomes excessive and should be divided throughout the day instead. Body weight-based dosing suggests 0.05-0.1 g/kg/day for general use, which equals approximately 2.5 teaspoons for a 70 kg person. Emergency situations may warrant higher doses up to 2 g/kg, but such applications require medical supervision. Since DMSO has an unpleasant taste, many people mix it with juice to improve palatability, and it's generally recommended to avoid taking it 1-2 days per week to prevent tolerance development.

11. What is Dolobene and how does the DMSO-heparin combination work for injuries?

Dolobene is a German-developed gel containing 10-15% DMSO, 2.5% dexpanthenol, and 50,000 IU of heparin that became one of the leading topical medications for sports injuries and arthritis in the 1980s. The combination works synergistically, with DMSO transporting heparin through the skin despite heparin's large molecular size, while dexpanthenol provides additional wound healing and anti-inflammatory benefits. Heparin's highly negative charge density makes it effective at improving circulation and potentially restoring zeta potential, while DMSO ensures deep tissue penetration that wouldn't occur with heparin alone.

The therapeutic mechanism addresses multiple aspects of injury healing simultaneously. DMSO provides anti-inflammatory effects, pain

reduction, and enhanced circulation, while heparin contributes anticoagulant properties that help resolve blood clots and improve microcirculation in injured tissues. Dexpanthenol breaks down into pantothenic acid, which supports cellular metabolism and promotes moisturizing and wound healing. This triple combination proved superior to any single component alone, demonstrating how DMSO's transport capabilities can unlock the therapeutic potential of substances that normally can't penetrate tissue barriers effectively.

12. What clinical evidence supports DMSO-heparin combinations for musculoskeletal conditions?

Multiple clinical studies from the 1980s demonstrated Dolobene's effectiveness across various musculoskeletal conditions. A study of 78 patients, mostly athletes with overstrained tendons, showed over 50% significant improvement after 2-3 weeks of three-times-daily treatment, with specific improvements including 94% reduction in pain, 55% reduction in swelling, 95% improvement in redness, and 92% improvement in warmth. Another study of 30 athletes with soft tissue injuries found excellent responses in 10 patients, excellent-to-good responses in 5, good responses in 10, and moderate responses in 5, with comprehensive improvements in pain, inflammation, swelling, hematoma reabsorption, tenderness, and recovery time.

Additional evidence comes from studies on trauma and vascular conditions. Fifteen subjects with recent blunt-tissue trauma to the lower extremity showed faster pain relief, edema reduction, and mobility recovery when treated with Dolobene gel and ultrasound compared to placebo controls. For vascular applications, 44 patients with various venous disorders including varicose vein complications showed 75% experiencing noteworthy improvement in multiple parameters including leg pain, heaviness, and swelling. A study of 38 patients with superficial thrombophlebitis found 59.5% reported improvement within one day, with progressive resolution of symptoms including 91.9% of resting pain resolved by day 4 and 84.2% free of cord-like inflammation by day 7.

13. How does Pennsaid combine DMSO with diclofenac and what are its benefits over oral NSAIDs?

Pennsaid contains 45% DMSO combined with diclofenac sodium, creating the only FDA-approved topical DMSO combination available in the United States. The 2004 randomized controlled trial used for its approval demonstrated that while DMSO alone improved symptoms by 28.5%, the DMSO-diclofenac combination achieved 39.925% improvement, showing clear synergistic benefits. The DMSO component enables diclofenac to penetrate deeply into tissues and reach therapeutic

concentrations at injury sites without requiring high systemic doses that cause dangerous side effects.

The primary advantage over oral NSAIDs lies in dramatically reduced systemic toxicity while maintaining equivalent pain relief effectiveness. Direct comparison studies showed topical DMSO-diclofenac was as effective as oral diclofenac for pain reduction but caused significantly fewer systemic side effects, particularly gastrointestinal complaints and abnormal laboratory values that commonly occur with oral NSAIDs. This is particularly important given that oral NSAIDs cause gastric bleeding, heart attacks, and kidney damage that collectively kill tens of thousands of Americans annually. The topical route allows targeted delivery to affected areas while minimizing exposure of sensitive organs to these toxic effects, representing a major safety advancement over conventional oral NSAID therapy.

14. What advantages do DMSO-steroid combinations offer over traditional steroid treatments?

DMSO dramatically increases steroid potency, with studies showing 0.025% fluocinolone in DMSO proving as effective as 0.2% fluocinolone alone, representing a ten-fold potency increase. This enhanced effectiveness allows for much lower steroid doses while achieving equivalent therapeutic results, potentially bypassing many of the serious side effects associated with higher steroid doses and prolonged systemic use. The combination also makes steroids 10 to 1000 times more potent in stabilizing lysozymes and greatly enhances their ability to reduce fibroblast proliferation.

The topical delivery advantage eliminates many systemic steroid complications while providing superior local tissue penetration. Studies showed 90% DMSO caused a four-fold increase in topical corticosteroid absorption and excretion, with effects comparable to subcutaneous injections but without injection-related complications. One dermatologist successfully treated 613 patients with 50% DMSO and triamcinolone acetonide, reporting no systemic reactions except one patient feeling "jittery" after large-area application. The enhanced penetration also eliminates the need for cumbersome occlusive dressings that were previously required to achieve adequate steroid penetration, making treatment more practical and comfortable for patients.

15. What skin conditions have been successfully treated with DMSO-steroid combinations?

Clinical studies demonstrated effectiveness across a broad spectrum of dermatologic conditions. A 1967 study using DMSO with 0.025% fluocinolone successfully treated contact dermatitis, atopic dermatitis,

seborrheic dermatitis, nummular eczema, psoriasis, lichen simplex chronicus, and various other inflammatory skin conditions. The same combination proved effective for a case of widespread lichen sclerosis and alopecia that had eliminated all of a patient's hair, demonstrating effectiveness even in severe, treatment-resistant conditions.

Psoriasis showed particularly dramatic responses, with multiple studies confirming the combination's effectiveness for treatment-resistant cases. A 1976 clinical trial found DMSO and topical corticosteroids completely resolved plaque-type psoriasis resistant to standard steroid treatment within 3-4 weeks, with steroids synergistically counteracting DMSO's occasional irritation at higher concentrations. A 2009 study corroborated these findings, showing complete clearance of resistant plaque-type psoriasis in 3-4 weeks. The combination also effectively reduced reactivity from cosmetic laser treatments and successfully treated various venous disorders when combined with additional anti-inflammatory compounds, demonstrating versatility across multiple dermatologic applications.

16. How do DMSO-steroid combinations help with rheumatoid arthritis?

Multiple studies demonstrated superior effectiveness of DMSO-steroid combinations compared to DMSO alone for rheumatoid arthritis treatment. A 1968 study found DMSO combined with hydrocortisone or procaine more effective than DMSO monotherapy, with improvement seen in 5 out of 8 rheumatoid patients, 17 of 20 patients with inflamed nerve roots, and 8 out of 10 with disc pain within just one week of treatment. The combination appeared to work faster and more comprehensively than individual components.

A larger 1979 study of 343 arthritic patients (320 with rheumatoid arthritis and 23 with deforming arthritis) compared DMSO alone to DMSO combinations containing heparin, sodium salicylate, or hydrocortisone. While 64% of patients showed significant improvement with DMSO alone, adding these compounds increased efficacy with quicker pain reduction and improved joint function. Another study found DMSO mixed with hydrocortisone significantly more effective than a combination NSAID-antidepressant therapy for rheumatoid arthritis. The combination also proved valuable for managing acute rheumatoid arthritis exacerbations triggered by corticosteroid withdrawal, providing relief within 5-10 minutes lasting up to 6 hours, while reducing required steroid doses for extensive rheumatoid arthritis with a 77.7% success rate in 36 treated cases.

17. What is the significance of DMSO combinations with 5-fluorouracil for cancer treatment?

DMSO significantly enhances 5-fluorouracil's (5-FU) potency and tissue penetration, making lower concentrations therapeutically effective while reducing systemic toxicity. A pivotal 1967 study demonstrated that DMSO allowed a 5% 5-FU concentration to locally treat keratoacanthoma, superficial basal cell carcinoma, and early-stage squamous cell carcinoma without adverse effects, whereas higher concentrations would typically be required without DMSO enhancement. This combination has been formulated into approved pharmaceutical products including Actikerall (Europe and Australia) for actinic keratosis and Verrucare/Verrumal for wart treatment.

The clinical applications extend beyond basic skin lesions to more challenging conditions. Studies showed the combination effectively treats seborrheic keratosis, common warts, and nail psoriasis, with particularly good results for pitted nails, leukonychia, and oil spots, though marginal results for onychodystrophy and crumbly nails. The DMSO-5FU combination represents an important advancement in topical cancer therapy because it allows effective treatment of skin cancers that might otherwise require surgical intervention or systemic chemotherapy with associated complications. The enhanced penetration ensures adequate drug concentrations reach cancer cells while the topical route minimizes systemic exposure and side effects.

18. How effective are DMSO-IDU combinations for treating herpes and shingles?

DMSO-IDU (5-Iodo-2'-Deoxyuridine) combinations demonstrated remarkable effectiveness for both herpes and shingles in multiple clinical trials. A 1966 blinded trial of 21 patients with recurrent herpes showed IDU alone was ineffective, DMSO alone halved the duration of flareups, but DMSO-IDU reduced episode length to one-third and prevented recurrences entirely. For severe herpes simplex infections, a 1965 study of 7 patients showed significant improvement in all cases, while 1972 research using 100% DMSO with 5% IDU successfully treated severe herpes simplex in 5 patients.

Shingles treatment showed equally impressive results across multiple controlled trials. Two 1970 randomized controlled trials demonstrated that both 5% and 40% IDU in DMSO were effective, with 40% concentrations proving superior over 4 days of repeated applications in reducing pain and healing time, with patients experiencing pain relief within a median of two days. A 1974 randomized controlled trial of 118 patients found the combination significantly shortened the vesicular

phase, healing time, and duration of pain while improving post-herpetic neuralgia. Most notably, a 1992 study of 171 patients with non-severe shingles found 40% DMSO with IDU superior to acyclovir for vesicle drying speed, pain duration, and preventing post-herpetic neuralgia, representing a significant advancement over current standard treatments.

19. What clinical trial results demonstrate the effectiveness of DMSO-IDU for viral infections?

Multiple randomized controlled trials provide compelling evidence for DMSO-IDU effectiveness across different viral conditions. The most comprehensive evidence comes from a 1990 randomized controlled trial involving 301 patients with recurrent genital herpes, where 80% DMSO mixed with 15% IDU reduced mean pain duration by 1.3 days and healing time to loss of crust by 1.7 days. When analyzing only classic herpes lesions with vesicle, ulcer, or crust formation, the benefits were even more pronounced, with pain duration reduced by 2.6 days and healing time to normal skin by 2.3 days.

For shingles specifically, the clinical evidence spans over two decades of research. A 1974 randomized controlled trial of 118 patients demonstrated significant improvements in vesicular phase duration, overall healing time, and pain duration with 100% DMSO and 5% IDU applied every 4 hours for 4 days. The 1992 comparative study with 171 shingles patients proved particularly significant because it directly compared the DMSO-IDU combination against acyclovir, the current standard treatment, showing superior results across multiple parameters including faster vesicle drying, reduced pain duration, decreased hyperaesthesia and itching, fewer new vesicle appearances, and most importantly, better prevention of post-herpetic neuralgia, a debilitating complication that affects many shingles patients long-term.

20. How does DMSO enhance antibiotic effectiveness against resistant bacterial infections?

DMSO enhances antibiotic effectiveness through multiple mechanisms, primarily by increasing bacterial cell permeability and transporting antibiotics that target intracellular processes. A foundational 1966 study showed 5% DMSO increased bacterial antibiotic sensitivity in both sensitive and resistant strains, with particularly dramatic effects on resistant organisms - all 4 strains of colistin-resistant pseudomonas became sensitive to treatment. The mechanism appears selective, with DMSO potentiating antibiotics that target cellular interiors while not improving those targeting cell walls, suggesting DMSO helps antibiotics penetrate bacterial defenses.

The potentiation effects are often dramatic, with studies showing DMSO can lower minimum inhibitory concentrations by factors of 10 to 1000. For example, streptomycin's required dose against resistant E. coli dropped from over 5000 μg/ml to just 7.5 μg/ml when combined with DMSO. Multiple studies demonstrated that gentamicin, ciprofloxacin, and norfloxacin all showed doubled potency against pseudomonas aeruginosa, with even greater enhancement against resistant strains. This resistance-breaking capability extends to clinically significant applications, with numerous studies showing bovine mastitis caused by resistant bacteria responding to DMSO-antibiotic combinations when antibiotics alone failed, demonstrating real-world therapeutic value for this potentiation effect.

21. What evidence exists for DMSO making tuberculosis bacteria susceptible to standard antibiotics?

Extensive laboratory evidence demonstrates DMSO's ability to restore tuberculosis antibiotic sensitivity. A 1995 study found DMSO combined with tuberculosis antibiotics made multidrug-resistant tuberculosis 4-64 times more susceptible to standard treatments, with non-lethal doses of ethambutol and 2-5% DMSO causing 4-16 fold increases in rifampicin sensitivity, 16-33 fold increases for streptomycin, and 4-16 fold increases for isoniazid. Similarly, isoniazid combined with 2.5% DMSO produced an eight-fold increase in susceptibility to other tuberculosis medications.

Clinical isolate studies provide additional compelling evidence. A 1976 study using cultures from tuberculosis patients found 5% DMSO made 19 of 61 isoniazid-resistant strains become susceptible to isoniazid and converted all 19 rifampin-resistant strains to rifampin sensitivity. Perhaps most dramatically, pretreating tuberculosis bacteria with 5% DMSO made them 200 times more sensitive to streptomycin. Animal studies confirmed these laboratory findings, with a 1974 guinea pig study showing that while all animals treated with isoniazid alone died within 80 days from drug-resistant tuberculosis, those receiving a single oral DMSO dose 2 weeks before isoniazid treatment all survived and remained alive a year later, representing complete treatment success for otherwise fatal infections.

22. How can DMSO-antibiotic combinations treat deep infections like osteomyelitis?

DMSO's unique penetration properties enable antibiotics to reach deep bone infections that are typically difficult to treat with conventional therapy. Osteomyelitis presents particular challenges because bone tissue has limited blood supply, making it difficult for systemically administered antibiotics to achieve therapeutic concentrations at

infection sites. DMSO addresses this limitation by transporting antibiotics directly through tissues and enhancing circulation to previously inaccessible areas, including deep bone tissue where osteomyelitis typically develops.

The enhanced penetration capability means that topical DMSO-antibiotic combinations can potentially achieve therapeutic concentrations in infected bone without requiring the high systemic doses that often cause significant toxicity. This approach is particularly valuable because conventional osteomyelitis treatment typically requires prolonged courses of intravenous antibiotics with associated risks including central line complications, antibiotic resistance development, and systemic toxicity. While specific clinical trials for DMSO-antibiotic treatment of osteomyelitis haven't been extensively published, the established principles of DMSO's tissue penetration and antibiotic potentiation suggest this approach could offer a less invasive alternative to traditional treatment protocols, potentially reducing treatment duration and complications while improving patient outcomes.

23. What respiratory and lung infections have been successfully treated with DMSO-antibiotic combinations?

Several respiratory conditions have shown remarkable responses to DMSO-antibiotic combinations across different administration routes. A 1969 study of 32 patients with destructive pulmonary tuberculosis and endobronchial tuberculosis found nebulized streptomycin and penicillin mixed in 10% or 25% DMSO significantly improved their infections. More extensively, a 1991 study demonstrated that nebulized DMSO mixed with rifampin over 1-2 months effectively treated 148 pulmonary tuberculosis patients and 18 with obstructive bronchitis, working both as standalone therapy and to enhance conventional treatments while significantly reducing rifampin's chronic liver toxicity.

Recent applications show continued success with resistant infections. A 2020 Libyan hospital reported complete recovery in 31 lung abscess patients treated with 16.67% DMSO and 2.78% ceftriaxone delivered via chest tube or endotracheal cannula, with no recurrences observed. For pediatric respiratory infections, a 1975 study used a comprehensive DMSO spray containing anti-inflammatory, antiviral, and antibacterial components for 30 seriously ill infants with respiratory diseases, achieving rapid clinical improvement and greatly reduced hospital stays. Additionally, anecdotal reports include cases like an English bulldog with pneumonia that failed to respond to eight weeks of three different antibiotics but achieved complete cure within one week of adding DMSO to the treatment protocol, demonstrating the combination's potential even in veterinary applications.

24. How does DMSO enhance antifungal medications for treating resistant fungal infections?

DMSO enhances antifungal effectiveness through improved tissue penetration and direct synergistic antifungal activity. Studies demonstrated DMSO significantly increases antifungal distribution, with research showing enhanced ketoconazole penetration into the brain, which is crucial for central nervous system fungal infections since few antifungals can cross the blood-brain barrier effectively. A 1991 guinea pig study found ultrasound increased amphotericin B skin penetration, but DMSO application prior to amphotericin B achieved even greater penetration without requiring ultrasound, demonstrating superior delivery enhancement.

Clinical applications have shown dramatic success in treating severe resistant infections. Multiple case reports documented severe fungal infections that failed conventional therapy and would have required amputation, but responded completely when antifungals were dissolved in DMSO. A 1968 German study demonstrated that increasing DMSO concentrations progressively inhibited various fungal species, and when combined with griseofulvin, the antifungal effect significantly exceeded either substance alone. The combination approach has proven particularly valuable for difficult-to-treat conditions, with a 1997 study showing 30% DMSO ointment with 1% itraconazole successfully treated 8 of 10 corneal fungal infections in horses, and a 2016 case report describing successful treatment of cutaneous pythiosis in a pregnant mare using DMSO and amphotericin B when other options were contraindicated.

25. What protocols exist for using DMSO-antifungal combinations for nail and skin infections?

Several established protocols have demonstrated effectiveness for topical fungal infections. A foundational 1965 study used 90% DMSO with 2% thiabendazole applied over two weeks, achieving excellent responses in all 16 patients with complete fungal elimination in 13 cases. For nail infections specifically, a 1966 study developed a protocol using very small doses - just 1 drop per nail bed of a mixture containing 0.5g bromosulfonylurea and 0.5g iodochlorohydroxyquinoline in DMSO, administered multiple times daily, which successfully treated chronic paronychia caused by Candida, other fungi, and bacteria with minimal toxicity risk.

More comprehensive protocols include a 1972 approach using a topical solution containing 2% triamcinolone acetonide, 0.05% benzalkonium chloride, 2% salicylic acid, and DMSO for bacterial and fungal nail

infections in 38 patients. For ringworm, a 1971 study established that DMSO mixed with griseofulvin could cure severe infections in cats within 5-10 days compared to 21-42 days with oral griseofulvin alone. The mixture typically required renewal every 3-4 days due to hardening from commercial preparation binders. Recent applications include using DMSO with various plant extracts, which a 2016 study found highly effective against candida infections isolated from mouth cancer patients when conventional antifungals had failed, demonstrating continued evolution of combination protocols.

26. How does DMSO potentiate chemotherapy drugs while reducing their toxicity?

DMSO enhances chemotherapy effectiveness through multiple complementary mechanisms while simultaneously reducing treatment toxicity. The compound concentrates preferentially in cancerous tissues, with studies showing 1.5-fold higher concentrations in brain tumors compared to normal tissue, allowing for more targeted drug delivery. DMSO's ability to transport chemotherapy agents through cellular barriers means lower systemic doses can achieve therapeutic concentrations at tumor sites, reducing exposure of healthy tissues to toxic effects. Additionally, DMSO appears to neutralize impermeable barriers that cancer cells create around themselves, making cytoskeleton-targeting drugs effective at doses 1/30th to 1/1000th of their usual requirements.

The toxicity reduction occurs through several pathways. DMSO has been shown to mitigate specific chemotherapy toxicities, such as protecting against gentamicin's kidney damage, and studies consistently show reduced side effects when DMSO is combined with chemotherapy compared to chemotherapy alone. A 1992 rat study found DMSO caused a 7.1-12.1 fold dose-dependent increase in doxorubicin concentration in bladder tissue and lymph nodes, reducing the required chemotherapy dose by 44% when mixed with just 5% DMSO. This dual benefit of enhanced efficacy and reduced toxicity represents a significant advancement, as conventional chemotherapy often fails because toxic doses are required to achieve therapeutic concentrations at tumor sites, whereas DMSO enables therapeutic effectiveness at doses that don't cause debilitating side effects.

27. What evidence supports DMSO-chemotherapy combinations for treating various cancers?

Multiple studies demonstrate that DMSO significantly enhances chemotherapy effectiveness while reducing toxicity. A 1975 study of 65 patients with incurable cancers found that low-dose cyclophosphamide

mixed in DMSO with GABA, GABOB, and acetylglutamine cured 57 of them. Similarly, a 1992 study of rats with bladder cancer showed DMSO caused a 7.1-12.1 dose-dependent increase in doxorubicin concentration in the bladder and lymph nodes, reducing the amount of chemotherapy needed by 44% when mixed at 5%.

Clinical evidence continues to mount with more recent applications. A 2021 study of 52 patients with surgically removed bladder cancer found that adding DMSO to chemotherapy regimens reduced relapse rates by approximately 50%. Additionally, DMSO appears to concentrate in cancers themselves—one study found a 1.5-fold concentration in brain tumors. The mechanism works through DMSO's ability to neutralize impermeable barriers around cancer cells and enhance cytoskeleton-targeting drugs, sometimes making 1/30th to 1/1000th of the usual dose sufficient for therapeutic effect.

28. How can DMSO-ivermectin combinations be prepared and used for cancer treatment?

A practical protocol involves grinding one 12mg ivermectin pill into powder using a mortar and pestle, then mixing it with roughly 2.5mL of 99.99% pure DMSO using a glass stirring rod to create a uniform cream. The paste should be applied as a thin layer to clean skin over the tumor area, allowed to dry for 30-60 minutes without bandaging, then washed off. Depending on the surface area, applications can be done 1-3 times daily at varying doses—low dose (0.25-0.5mL covering a nickel-sized area), medium dose (0.5-1mL covering a quarter-sized area), or high dose (2-3mL covering 2-3 quarter-sized areas).

One doctor reported remarkable success with this combination, treating a confirmed metastatic colon cancer and showing good responses in 5 prostate, 1 breast, and 1 ovarian cancer cases that hadn't metastasized. The potentiation occurs because DMSO bypasses the liver's first-pass metabolism that normally breaks down about half of ingested ivermectin, allowing much higher concentrations to reach the target area directly. Additionally, DMSO's broad anticancer properties enhance ivermectin's mechanisms including inhibiting proliferation, inducing programmed cell death, enhancing immune targeting of cancers, and reducing chemotherapy resistance.

29. What eye conditions can be treated with DMSO eye drops and what are the protocols?

DMSO eye drops can treat an extensive range of conditions including cataracts, glaucoma, macular degeneration (both wet and dry), retinal diseases, macular edema, herpes in the eye, conjunctivitis, inflammation of the middle eye layer, styes, dry eyes, sensitivity to glare, eye fatigue,

lens and vitreous opacities, and post-cataract surgery recovery. The German DMSO community has found that most eye diseases can be treated or improved with proper formulations, with many experiencing restored vision, reduced eye strain, and decreased need for glasses.

The standard protocol uses 3% DMSO diluted in isotonic 0.9% saline solution to match the eye's natural salt levels and minimize irritation. Typically 2-8 drops per eye are applied daily, with users intuitively determining the correct dose—higher doses for acute conditions and lower doses (1 per day) for general vision maintenance. For preparation, 97mL of 0.9% saline is mixed with 3mL of DMSO in sterilized containers, often made in larger batches and stored with micro-filtration used to prevent bacterial contamination. Concentrations as low as 0.5% have shown benefits, while anything above 3-4% may cause burning, making 3% the optimal balance of effectiveness and comfort.

30. How do DMSO eye drop formulations improve vision and treat degenerative eye diseases?

DMSO eye drops work through multiple mechanisms that address the root causes of eye dysfunction and degeneration. They dramatically improve circulation and oxygenation in the eyes while causing them to "rehydrate" and reducing muscle tension around the ocular structures. This enhanced blood flow and cellular metabolism helps reverse the stagnation and poor nutrient delivery that underlies many degenerative eye conditions. The drops also help remove deposits from the eyes and in some cases can even change eye color, suggesting they're clearing accumulated waste products that interfere with normal eye function.

The clinical results have been remarkable across numerous eye conditions that conventional medicine considers difficult or impossible to treat. Studies have shown DMSO effectively treating macular degeneration, cataracts, glaucoma, corneal edema, retinitis pigmentosa, and corneal burns, with case reports documenting restoration of sight that had been lost for years. Many users find their gradually declining vision stabilizes and improves, allowing them to reduce dependence on glasses or contact lenses. The treatment appears to work by restoring normal cellular function to eye tissues, improving waste removal, and enhancing the eye's natural repair mechanisms rather than simply masking symptoms.

31. What was the Science for the Masses experiment with DMSO and night vision enhancement?

Science for the Masses, a group dedicated to conducting accessible research outside academic and industry restrictions, developed an extraordinary experiment using DMSO to deliver chlorin e6 (Ce6) into

the eyes. Ce6 is a photosensitizing chlorophyll breakdown product produced by algae like chlorella, normally used in photodynamic therapy for certain cancers, but with some data suggesting it could enhance night vision. The researchers combined Ce6 with DMSO and inulin to create eye drops that could transport this compound directly into the eye tissues.

The results were remarkable—after administering these eye drops, the test subject gained the ability to recognize people up to 164 feet away in complete darkness. This represents a dramatic enhancement of natural night vision capabilities far beyond what human eyes can normally achieve. The effect was temporary, lasting about a day before wearing off completely with the subject's vision returning to normal and no residual side effects. This experiment demonstrates DMSO's unique ability to transport novel compounds into sensitive tissues like the eyes, opening possibilities for vision enhancement that would be impossible through conventional delivery methods.

32. How are DMSO ear drops used to treat tinnitus and other ear conditions?

DMSO ear drops have proven effective for tinnitus, hearing loss, otitis media, otitis externa, and various ENT infections, with 15% concentration being commonly chosen as it provides effectiveness without irritation. The protocol involves applying drops to both ears—lying on one side for 5-10 minutes after drops are applied, then switching to the other side for the same duration. Interestingly, applying drops to both sides of the nose in addition to the ears has been found to increase the efficacy for treating tinnitus, suggesting interconnected pathways between these structures.

For preparation, DMSO is typically diluted with isotonic solutions like 0.9% sodium chloride, isotonic seawater, or 12% magnesium chloride rather than regular water, as these provide better therapeutic results. Some people tolerate concentrations up to 50-90% without issue, but 15% remains the standard to avoid the itching and irritation that some experience at higher doses. A 1967 ENT doctor reported that while DMSO alone would significantly reduce infections for 2-4 hours, when combined with other substances like antibiotics, dramatic improvements occurred—for example, the eardrum of an otitis media patient would begin shrinking within 10-15 minutes of treatment.

33. What is neural therapy and how do DMSO-local anesthetic combinations enhance it?

Neural therapy is a German medical approach that recognizes scars can create "interference fields" that continually disrupt the autonomic

nervous system, leading to chronic and sometimes debilitating syndromes like complex regional pain syndrome. The therapy involves injecting local anesthetics into problematic scars, which causes them to "reset" and stop triggering the nervous system, often resolving complex issues that seemed unrelated to the original injury. This approach frequently produces phenomenal results for conditions that conventional medicine struggles to treat, as it addresses the root cause of autonomic nervous system dysfunction rather than just managing symptoms.

DMSO dramatically enhances neural therapy by transporting local anesthetics through the skin and spreading them through tissues, often eliminating the need for painful injections. The German DMSO community discovered that mixing DMSO with local anesthetics like procaine not only treats scars effectively but enhances DMSO's other curative properties. This combination can treat tissue adhesions, neuropathic pain, muscle stiffness, circulatory restrictions, non-healing wounds, arthritis, autoimmune conditions, and various chronic issues. Many practitioners now advocate treating every scar on the body with this mixture, as they often observe profound improvements when the correct interference field is addressed, even from scars people don't remember having.

34. How can DMSO-procaine combinations treat problematic scars and interference fields?

DMSO-procaine combinations work by addressing the neurological dysfunction that scars create in the body's autonomic nervous system. When tissues are injured and form scar tissue, they can create ongoing electrical disturbances that interfere with normal nerve function, leading to chronic health problems that may seem completely unrelated to the original injury. The combination of DMSO's tissue penetration abilities with procaine's nerve-resetting properties allows the treatment to reach deep into scar tissue and restore normal neurological function. This is particularly important for surgical scars, C-section scars, vaccination sites, and any area where the normal tissue architecture has been disrupted.

The treatment protocol typically uses 1-2% procaine solution diluted with 1-4 parts of other components in a DMSO mixture, with the concentration adjusted based on the area being treated. For sensitive areas like the face or gums, lower concentrations (3-30%) are used, while deeper tissue involvement or chronic conditions require higher doses and larger applications. The mixture is usually left on the area for at least 30 minutes and applied 1-2 times daily. Many people report an "unimaginable sense of lightness" or "softening of deep hardening throughout their body" after successful scar treatment, indicating the

release of long-standing tension patterns that had become normalized over time.

35. What conditions respond to DMSO-local anesthetic combinations for chronic pain?

DMSO-local anesthetic combinations have shown remarkable success treating neuropathic pain conditions that often resist conventional treatments, including diabetic neuropathy, sciatica, trigeminal neuralgia, post-chemotherapy pain, shingles pain, and post-surgical pain. The combination also effectively addresses muscle-related conditions like dystonia, neck stiffness, gallbladder spasms, and various forms of chronic autoimmune pain. These conditions often involve nerve dysfunction or hypersensitivity that the anesthetic component can reset while DMSO ensures deep tissue penetration and provides its own anti-inflammatory and healing properties.

The mechanism works particularly well for complex regional pain syndrome, fibromyalgia, and other conditions where the nervous system has become hypersensitized or stuck in pain cycles. Unlike conventional pain medications that simply block pain signals, this combination appears to restore normal nerve function and break the cycle of chronic pain. Many patients report not just pain relief but actual resolution of long-standing conditions, with improvements lasting well beyond the duration of the anesthetic effect. The treatment is especially valuable because it can reach areas that are difficult to treat with conventional approaches, such as deep tissue adhesions, internal scars, and areas where previous injuries have created ongoing neurological dysfunction.

36. How are DMSO-magnesium combinations prepared and what conditions do they treat?

DMSO-magnesium combinations typically use magnesium chloride at 12% concentration as the dilutant to avoid crystallization that occurs with higher concentrations like the 30% found in magnesium oil. For common injuries and scars, six parts pure DMSO are mixed with four parts of 12% $MgCl_2$ solution, creating a 60% DMSO mixture. For sensitive, dry, or cracked skin, or facial scars such as those from shingles, seven parts of the 12% $MgCl_2$ solution are used instead, making a gentler 30% DMSO solution. This combination has proven effective for hair loss, polyneuropathy, musculoskeletal injuries, baker's cysts, tendonitis, hip bursitis, and tendon spasms.

Magnesium amplifies DMSO's injury-healing and pain-reducing qualities because it's essential for muscle relaxation, mitochondrial energy production, and tissue regeneration—areas where most people are deficient. When applied topically, magnesium already has some

absorption through the skin, but DMSO dramatically enhances this penetration while adding its own therapeutic effects. Many users report not just pain relief but increased energy levels when using these combinations. For internal applications like ear drops, enemas, or mouthwashes, DMSO is diluted to 15% with either the 12% $MgCl_2$ solution or isotonic seawater, and the mixture can also be taken orally at the same dosing as standard DMSO protocols.

37. What is ambroxol and how does it combine with DMSO for chronic pain treatment?

Ambroxol is a mucolytic drug used for respiratory conditions like bronchitis and COPD that also functions as a potent local anesthetic, being roughly 40 times more effective than lidocaine at blocking sodium channels, particularly the C-fibers associated with chronic neuropathic pain. Unlike conventional painkillers, ambroxol doesn't act on the central nervous system and is considered quite safe, with small studies showing effectiveness for conditions where standard treatments including lidocaine have failed. It has demonstrated improvements for neuropathic pain, trigeminal neuralgia, complex regional pain syndrome, fibromyalgia, and other chronic pain conditions when used orally or topically.

The DMSO community has found that DMSO dramatically and safely enhances ambroxol's pain-relieving capabilities throughout the body. The combination is used for neuropathic pain, joint pain, back pain, frozen shoulder, and neuralgias, providing significant pain relief lasting approximately 6 hours and sometimes treating pain or numbness that had persisted for years without relief. The mixture is typically made into a cream using DAC base cream (60-70%), ambroxol (20%), and pure DMSO (10-20%), though it can also be taken orally by dissolving 600mg tablets in 10mL water with 2mL DMSO. This combination offers a safer alternative to conventional pain medications while often providing superior results for difficult-to-treat chronic pain conditions.

38. How can DMSO enhance Lyme disease treatment protocols?

DMSO offers four unique advantages for Lyme disease treatment that address major challenges in managing this chronic infection. First, it enhances central nervous system penetration of antibiotics like ceftriaxone, which is crucial since chronic Lyme often affects the brain and requires drugs that can cross the blood-brain barrier. Second, it enables topical administration of expensive IV-only antibiotics, potentially making treatments more accessible and less burdensome for patients who otherwise need prolonged intravenous therapy. Third,

DMSO's ability to remove antibiotic resistance could increase treatment success rates, as many chronic Lyme cases involve bacteria that have developed resistance to standard antibiotics.

The fourth major advantage is that DMSO could potentially reduce the gut microbiome damage caused by months or years of oral antibiotics that many Lyme protocols require. By enabling topical absorption of antibiotics like doxycycline, patients might achieve therapeutic levels while bypassing much of the gastrointestinal tract. While some applications remain theoretical—such as whether ceftriaxone, which is near DMSO's size transport limit, can be effectively absorbed through the skin—many common oral Lyme antibiotics are small enough for DMSO transport. One reader reported successfully using Keflex mixed with DMSO topically for mastitis, finding it both effective against infection and free of the usual GI side effects, suggesting similar benefits could apply to Lyme treatment.

39. What are the best sources for obtaining high-quality pharmaceutical-grade DMSO?

Three top-quality sources stand out for pharmaceutical-grade DMSO: Jacob Lab (99.98% pure), The DMSO Store (99.995% pure), and Nature's Gift (99.9% pure). The highest purity option, The DMSO Store at 99.995%, is often preferred for internal applications due to its exceptional purity. Jacob Lab, run by Stanley Jacob's son, maintains the highest standards in continuing his father's pioneering work. The best purchasing approach is to buy directly from DMSOstore.com or Jacob Lab rather than through third-party retailers, as this ensures authentic products and proper handling.

When selecting DMSO, liquid forms should always be purchased in glass containers unless the plastic is specifically DMSO-resistant, as many plastics can leach harmful compounds into the DMSO. Gel forms are acceptable in plastic containers since they're already diluted below the concentration that typically causes leaching. Many people have reported being scammed by online promoters taking advantage of DMSO's current popularity, so it's crucial to stick with established, long-standing vendors. Local sources like Tractor Supply can work for immediate needs such as injuries, but the higher-purity pharmaceutical grades are preferable for preparing therapeutic combinations and internal use.

40. What dilution agents work best with DMSO for different applications?

The most effective dilution agents are isotonic solutions that match the body's salt content, as these create the most harmonious and non-irritating combinations, especially for sensitive areas like mucous

membranes. Isotonic 0.9% saline solution is widely available and works well for most applications, while nano-filtered deep-sea seawater from clean ocean regions is particularly popular because it contains essential minerals that support cellular transport—a key aspect of DMSO's therapeutic mechanisms. Isotonic seawater formulations can be purchased or created by diluting concentrated seawater to one-third strength with two parts purified water.

Dilute magnesium chloride at 12% concentration is another excellent choice, as magnesium amplifies DMSO's healing properties while supporting muscle relaxation and cellular energy production. Other beneficial dilutants include coconut water for its isotonic properties and healing compounds, basic water with pH 9.5 for detoxification protocols, and glycerin for certain applications. More unusual but sometimes effective options include one's own urine and filtered rainwater. For internal use and sensitive applications, these dilutants should be filtered through 0.22 μm syringe filters to ensure sterility, and the choice often depends on the specific therapeutic goal and individual tolerance.

41. How should DMSO be sterilized and what filtration methods are appropriate?

DMSO cannot be sterilized using conventional methods because it reacts with most sterilizing agents, so the accepted method is filtration through 0.22 μm filters housed in DMSO-compatible materials. This microfiltration effectively removes bacteria and other microorganisms while preserving DMSO's therapeutic properties. When DMSO is mixed with polymers or other large molecules that cannot pass through the filter, each component must be purified separately and then compounded together under sterile conditions. This approach ensures both sterility and maintains the integrity of all therapeutic components.

For home preparation of DMSO combinations, syringe filters with 0.22 μm pore size provide an effective sterilization method, particularly when preparing eye drops, injection solutions, or other applications where sterility is crucial. The filters must be made from materials compatible with DMSO to prevent leaching of harmful compounds. When preparing larger batches for storage, sterilized glass containers should be used, and the mixture should be protected from UV light, which is why DMSO is often sold in amber bottles. It's worth noting that DMSO itself has antimicrobial properties, especially at higher concentrations, which provides some natural protection against contamination, but proper filtration remains the gold standard for applications requiring sterility.

42. What specific protocols exist for treating strokes and neurological conditions with DMSO?

DMSO has shown remarkable efficacy in treating strokes and neurological conditions, with studies demonstrating its ability to reduce brain swelling, improve circulation, and protect nerve cells from damage. For acute strokes, higher concentrations and intravenous administration have been most effective, with some emergency protocols using concentrations up to 25% in isotonic solution, though 3-7.5% is more commonly recommended for safety. The treatment works by rapidly reducing intracranial pressure, improving oxygen delivery to damaged brain tissue, and protecting cells from the cascade of damage that typically follows a stroke. Time is critical—the earlier DMSO is administered after stroke onset, the better the outcomes.

For chronic neurological conditions like paralysis, Down syndrome, and dementia, protocols typically involve both topical and oral administration over extended periods. Topical applications of 50-70% DMSO are applied to the neck, head, and affected areas, while oral dosing starts with 1-2 teaspoons in water and may increase based on response. The treatment appears to help regenerate damaged nerve pathways and improve circulation to areas of the brain that have been compromised. Many patients show gradual improvement in motor function, cognitive abilities, and overall neurological status. For spinal cord injuries, both topical application over the injury site and systemic administration have shown benefits in reducing inflammation and promoting nerve regeneration.

43. How has DMSO been used to treat autoimmune conditions like scleroderma?

DMSO has demonstrated remarkable effectiveness against scleroderma and other autoimmune conditions by addressing the underlying mechanisms that drive these diseases, particularly inflammation, tissue hardening, and impaired circulation. In scleroderma, DMSO helps soften and normalize the thickened, hardened skin and connective tissues that characterize this condition. The treatment works by improving circulation to affected areas, reducing the inflammatory processes that drive tissue damage, and appears to help reset immune system dysfunction. Patients often experience gradual softening of hardened skin, improved mobility, and reduction in the painful symptoms associated with this progressive condition.

The protocol for autoimmune conditions typically involves both topical and oral DMSO, starting with lower concentrations and gradually increasing based on tolerance and response. Topical applications of 50-

70% DMSO are applied to affected skin areas, while oral dosing begins with 1-2 teaspoons in water daily. Many patients with scleroderma report significant improvements in skin texture, joint mobility, and overall quality of life. DMSO's effectiveness extends to other autoimmune conditions including amyloidosis, interstitial cystitis, and various inflammatory disorders. The treatment appears to work by modulating immune system responses, improving tissue oxygenation, and helping restore normal cellular function in areas damaged by autoimmune processes.

44. What role did Stanley Jacob play in developing DMSO research and applications?

Stanley Jacob was the pioneering physician-researcher who transformed DMSO from an industrial solvent into a revolutionary medical therapy, dedicating over four decades of his career to advancing its clinical applications. Working at Oregon Health & Science University, Jacob conducted extensive research that demonstrated DMSO's safety and efficacy for treating strokes, injuries, pain, and numerous other conditions. He believed DMSO represented an entirely new therapeutic principle that could transform medicine, and his tireless advocacy kept the field alive despite significant institutional resistance. Jacob's meticulous documentation of thousands of cases and his commitment to scientific rigor established the foundation for all subsequent DMSO research.

Beyond his research contributions, Jacob served as the primary advocate for DMSO in the medical community, fighting regulatory battles and working to educate physicians about its potential. His vision extended far beyond individual applications—he saw DMSO as representing a fundamental shift in how medicine could work, moving from symptom suppression to actual healing and regeneration. Jacob's legacy includes not only the extensive body of research he generated but also the network of physicians and researchers worldwide who continue advancing DMSO applications. His son now runs Jacob Lab, continuing the family's dedication to providing high-quality DMSO and advancing the science his father pioneered.

45. How did the FDA's restrictions impact DMSO research and clinical development?

The FDA's restrictions on DMSO created a devastating impact on research and development that persists to this day, effectively stalling what could have been revolutionary advances in medical treatment. The restrictions began when the FDA amplified concerns about temporary vision changes seen in dogs given extremely high doses, despite this

effect never occurring in humans and being reversible even in animals. The FDA then demanded that all DMSO trials include continuous eye monitoring, making studies financially prohibitive to conduct. This created an effective embargo on DMSO research in the United States, forcing most legitimate scientific investigation to cease just as promising results were emerging.

The regulatory stranglehold meant that despite DMSO's proven safety and efficacy in thousands of studies, it could only be approved for a single indication—intravesical treatment of interstitial cystitis. Ironically, while DMSO alone remained largely banned, the FDA readily approved numerous pharmaceutical products containing DMSO as a "safe and inert ingredient" when combined with patentable drugs. This created the absurd situation where DMSO was simultaneously considered too dangerous for medical use yet safe enough to include in approved medications. The restrictions drove research underground and overseas, depriving patients of a therapy that could have prevented enormous suffering while enriching pharmaceutical companies that could patent DMSO combinations.

46. What evidence exists from the thousands of studies conducted on DMSO's medical properties?

Between 50,000 to 100,000 studies have been published on DMSO's medical and chemical properties, making it one of the most extensively researched therapeutic substances in history. These studies have documented DMSO's effectiveness for an extraordinary range of conditions including strokes, paralysis, neurological disorders, circulatory problems, tissue injuries, chronic pain, autoimmune conditions, head and sinus problems, organ diseases, skin conditions, infections, and various aspects of cancer treatment. The research consistently shows DMSO's safety when used properly, with serious adverse effects being extremely rare despite its use by millions of people worldwide.

The evidence base is particularly strong for acute conditions like strokes and injuries, where DMSO often produces dramatic improvements that no other therapy can match. Studies have shown it can reduce stroke damage by up to 70% when administered promptly, heal burns without scarring, resolve chronic pain that hasn't responded to other treatments, and restore function to damaged tissues. What makes this evidence even more compelling is that much of it comes from controlled clinical trials conducted in the 1960s and 1970s before regulatory restrictions made such research nearly impossible. The consistency of positive results across different research groups, countries, and decades creates an

overwhelming body of evidence supporting DMSO's therapeutic potential.

47. How has the underground DMSO community contributed to advancing combination therapies?

A dedicated worldwide community of physicians, researchers, and advocates has kept DMSO science alive despite official neglect, conducting innovative research and developing practical applications that would have been impossible within conventional medical institutions. This community has been particularly crucial in advancing combination therapies, systematically testing the almost infinite number of possible DMSO combinations to identify the most effective protocols for various conditions. Their work has been driven by a commitment to bringing this non-patentable remedy to humanity, often requiring enormous personal sacrifice with little financial reward.

Particularly notable is the work of Hartmut Fischer and his German network, who have spent over a decade developing scientifically rigorous approaches to DMSO combination therapies with careful attention to chemistry and quality control. This community has created networks of practitioners, compiled extensive databases of successful protocols, and maintained the highest standards of accuracy in their work. Their contributions include developing the magnesium-DMSO combinations for injuries, the neural therapy protocols for scars, the eye drop formulations for vision problems, and countless other innovations that have helped thousands of people. Without this underground community's dedication, much of DMSO's therapeutic potential would have been lost forever.

48. What is the current regulatory status of DMSO in different countries?

DMSO's regulatory status varies dramatically worldwide, with the United States having some of the most restrictive policies despite extensive safety data. In America, DMSO is only FDA-approved for intravesical treatment of interstitial cystitis, though it can be legally obtained as a supplement thanks to the 1994 DSHEA act. However, numerous FDA-approved medications contain DMSO as an active pharmaceutical ingredient when combined with other drugs, creating the contradictory situation where DMSO is considered both too dangerous to use alone yet safe as a component of patented medications.

European countries generally have much more liberal policies, with DMSO widely available in pharmacies and incorporated into numerous approved pharmaceutical products. Russia sells pure DMSO (Dimeksid) in pharmacies, while Germany has approved various DMSO combination

products for musculoskeletal and dermatologic conditions. Many European physicians regularly prescribe DMSO-containing medications, and research continues in several countries. This regulatory disparity means that Americans are largely denied access to therapies that are considered safe and effective in other developed nations, highlighting how regulatory politics rather than scientific evidence often determines medical availability.

49. How do European pharmaceutical companies incorporate DMSO into approved medications?

European pharmaceutical companies have successfully developed numerous DMSO-containing medications that demonstrate both safety and efficacy, with many having been available for decades. Products like Dolobene gel combine DMSO with heparin and dexpanthenol for sports injuries and arthritis, while various other formulations include NSAIDs, steroids, and antimicrobials. These products typically describe DMSO as a "safe and inert ingredient" in their package inserts, despite DMSO providing significant therapeutic benefits beyond just drug delivery. The success of these combinations helped establish the safety profile that regulators required for approval.

The approach allows companies to patent combinations while leveraging DMSO's proven therapeutic benefits, creating commercially viable products that might not exist otherwise. Examples include Pennsaid (DMSO with diclofenac) for arthritis pain, various antifungal combinations, and specialized products like Synotic for dog ear inflammation. This demonstrates that when DMSO is combined with patentable drugs, regulatory approval becomes achievable, whereas DMSO alone faces insurmountable regulatory barriers. The irony is that many of these products work primarily because of DMSO's therapeutic properties, yet DMSO alone remains largely unavailable for medical use in many jurisdictions despite being the active component driving the therapeutic benefit.

50. What future research directions show the most promise for DMSO combination therapies?

The most promising research directions involve expanding the systematic exploration of DMSO combinations with both natural and pharmaceutical agents, particularly focusing on applications where conventional medicine has limited success. Cancer treatment combinations show enormous potential, especially protocols combining DMSO with substances like ivermectin, fenbendazole, and photodynamic therapy agents. Neurological applications represent another frontier, particularly using DMSO to deliver novel compounds across the blood-

brain barrier for conditions like Alzheimer's, Parkinson's, and traumatic brain injury. The recent night vision enhancement experiment demonstrates how DMSO could enable entirely new categories of human enhancement and therapeutic intervention.

Regenerative medicine applications appear especially promising, combining DMSO with stem cell therapies, growth factors, and tissue repair compounds to accelerate healing beyond what's currently possible. The potential for developing topical alternatives to IV-only medications could revolutionize treatment accessibility and reduce healthcare costs while improving patient outcomes. Perhaps most importantly, the systematic study of DMSO's mechanisms of action could unlock an entirely new understanding of how cellular repair and regeneration work, potentially leading to breakthrough treatments for aging, chronic disease, and conditions currently considered incurable. The underground community's decades of practical experience provides a rich foundation for formal research that could transform medicine if institutional barriers can be overcome.

The DMSO Handbook: A Practical Guide to its Uses and Applications

By A Midwestern Doctor – 50 Q&As – Unbekoming Summary

If you've been following the DMSO discussion you would know that A Midwestern Doctor has created a magnificent multi-part series diving into the subject in great detail.

Recently Dr Robert Yoho has collated all the parts and added a very helpful index.

Surviving Healthcare | Robert Yoho, MD | Substack

We have been given a phenomenal book-length manuscript of about 90,000 words, and AMD plans to write five more posts. No other current reference is as accessible, well-referenced, or comprehensive. Here are the original articles with links:

1. **How DMSO Treats "Incurable" Autoimmune and Contractile Disorders**
2. **DMSO Could Save Millions From Brain and Spinal Injury**
3. **How DMSO Cures Eye, Ear, Nose, Throat and Dental Disease**
4. **The Remarkable History and Safety of DMSO**
5. **DMSO is a Miraculous Therapy for Chronic Pain and Musculoskeletal Injuries**
6. **How DMSO Protects and Heals the Internal Organs**
7. **DMSO Revolutionizes Skin Care and Dermatology**
8. **The FDA's War Against DMSO and America**
9. **DMSO Transforms The Treatment of Infectious Diseases**

I've decided to further promote and amplify this collection/handbook with my own synthesis and summary below.

With thanks to the incredibly important work of A Midwestern Doctor.

The Forgotten Side of Medicine | A Midwestern Doctor | Substack

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Related

Healing with DMSO

DMSO Nature's Healer

The DMSO Handbook for Doctors

I'm going to steal Dr Robert Yoho's disclaimer:

The information presented here is for **informational and educational purposes only** and is **not intended as medical advice.**

If you think I am your doctor, you are deluded, and if you think medical care can be run out of a Substack, you are crazy. But if you yearn for a day when chlorine dioxide, DMSO, and common sense will replace Rockefeller medicine, join the club. It cannot come too soon.

12-point summary

1. Revolutionary Discovery and Properties DMSO represents a fundamental shift in medical treatment, as it can rapidly enter the body through any route of administration and cross biological barriers that normally block other substances. This simple chemical, discovered as a paper manufacturing byproduct, demonstrated unprecedented abilities to carry other substances throughout the body while simultaneously protecting cells from death under various stressful conditions.

The compound's remarkable safety profile, with no deaths linked to its use among millions of users over 60 years, sets it apart from common medications like NSAIDs and opioids that kill tens of thousands annually. Its ability to serve multiple therapeutic functions simultaneously - reducing inflammation, improving circulation, relieving pain, and protecting cells - makes it unique in medical science.

2. Medical Applications and Success Rates DMSO consistently demonstrated 80-90% success rates across a wide range of conditions, from acute injuries to chronic diseases. Its applications include treating strokes, spinal cord injuries, autoimmune conditions, arthritis, burns, and even previously "incurable" conditions like scleroderma and Down Syndrome.

Clinical evidence showed dramatic results, such as stroke patients recovering function when treated within hours, paralyzed individuals regaining mobility, and children with Down Syndrome achieving unprecedented developmental progress. These outcomes were consistently reproduced across thousands of cases and multiple research centers worldwide.

3. FDA Opposition and Regulatory Barriers The FDA's campaign against DMSO began with concerns about managing multiple applications but evolved into a broader power struggle over medical regulation. Under Commissioner Goddard, the agency implemented aggressive enforcement tactics, including police-style raids, threats of criminal prosecution, and media manipulation to discourage DMSO research and use.

This opposition persisted despite extensive safety data and positive clinical results, with the FDA maintaining barriers through rigid interpretation of testing requirements that DMSO couldn't meet due to its distinctive properties. The agency's handling of DMSO established precedents for suppressing promising treatments that continue to impact medical innovation today.

4. Research and Scientific Evidence By 1991, over 3,000 clinical studies involving more than 500,000 patients had documented DMSO's safety and efficacy. Multiple international symposiums presented extensive research showing positive results across numerous conditions, with particularly strong evidence in treating acute injuries, inflammation, and neurological conditions.

The research was notable for its breadth and consistency, with positive results reproduced across multiple species, research centers, and countries. However, the FDA's insistence on double-blind studies - impossible due to DMSO's characteristic odor and immediate effects - created an arbitrary barrier to approval despite this extensive evidence.

5. Public and Professional Response Initial public response to DMSO was overwhelmingly positive, with demand spreading rapidly as patients experienced dramatic recoveries. By 1965, over 100,000 people were using DMSO, and many doctors incorporated it into their practices despite regulatory restrictions.

This widespread adoption led to the development of a significant black market and cross-border treatment centers, particularly in Mexico. Several states eventually passed legislation to legalize DMSO use within their borders, demonstrating strong public and professional support despite federal opposition.

6. International Adoption vs US Restriction While the FDA restricted DMSO use in the United States, many other countries maintained its availability based on positive clinical evidence. Countries including Germany, Austria, Switzerland, and the Soviet Union approved DMSO for various medical applications, creating a stark contrast with U.S. policy.

This international-domestic divide highlighted how regulatory policy, rather than scientific evidence, drove DMSO's limited availability in the United States. The contrast became particularly evident at international research symposiums, where European scientists showed much greater openness to DMSO's therapeutic potential.

7. Economic and Industry Impact Initially, major pharmaceutical companies invested heavily in DMSO development, with six leading companies competing to bring it to market. However, FDA opposition effectively ended this interest, as companies feared regulatory retaliation affecting their other products.

This demonstrates how regulatory pressure can discourage even large pharmaceutical companies from developing promising treatments, particularly when those treatments might compete with existing profitable drugs. The economic impact extended beyond pharmaceuticals, affecting medical practice patterns and creating alternative markets for DMSO access.

8. Scientific Innovation and Suppression DMSO's story illustrates how institutional barriers can suppress medical innovation despite strong scientific evidence. The contrast between early research freedom, which led to numerous discoveries, and later regulatory restrictions shows how bureaucratic control can limit scientific progress.

This suppression established patterns that continue to affect medical innovation today, where promising treatments may be overlooked or abandoned due to regulatory hurdles rather than scientific merit. The DMSO case demonstrates how regulatory frameworks can prioritize control over advancement.

9. Medical Freedom and Patient Access The DMSO controversy highlighted fundamental tensions between regulatory protection and medical freedom. Patients and doctors often found themselves forced to choose between following federal restrictions and accessing potentially life-changing treatment.

This conflict led to various workarounds, including state-level legalization and cross-border treatment, demonstrating how regulatory restrictions can create parallel systems of medical care. The situation raised enduring questions about balancing safety oversight with treatment access.

10. Political and Legislative Response Congressional intervention, including multiple hearings and investigations, proved unable to overcome FDA resistance to DMSO. Despite clear evidence of arbitrary standards and inconsistent handling, political oversight failed to significantly impact agency decision-making.

This demonstrated the limitations of legislative oversight in affecting regulatory policy, even with strong evidence of agency overreach. The political response also highlighted how bureaucratic inertia can resist change even when supported by elected officials.

11. Legacy and Current Status Though DMSO remains available today through various channels, its full potential remains largely unrealized due to decades of regulatory suppression. The single FDA approval for interstitial cystitis represents a fraction of its demonstrated therapeutic applications.

The compound's history serves as a cautionary tale about regulatory overreach and lost medical opportunities. Despite continued evidence of its value, institutional barriers established during its suppression continue to limit its integration into mainstream medicine.

12. Lessons for Medical Innovation DMSO's story provides crucial insights into the challenges facing medical innovation, particularly for treatments that don't fit traditional pharmaceutical models. The case demonstrates how regulatory frameworks designed to ensure safety can instead become barriers to beneficial treatments.

The experience offers important lessons about the need for flexible regulatory approaches that can accommodate novel treatments while maintaining appropriate safety oversight. It also highlights the importance of preserving medical freedom and professional judgment in treatment decisions.

50 Questions & Answers

1. What is DMSO and how was it discovered?

Dimethyl sulfoxide (DMSO) is a simple chemical compound composed of two methyl groups and an oxygen atom bonded to sulfur, naturally occurring in small amounts in milk, tomatoes, tea, coffee, beer, clams, and cooked corn. The salty smell of the ocean is partially due to microalgae creating DMSO near the surface. It was first synthesized by Russian chemist Alexander Zaytsev in 1866 but remained largely forgotten until the 1940s when industrial chemists explored its potential as a solvent from paper manufacturing waste.

In the 1950s, Crown Zellerbach, a major American paper manufacturer, began producing DMSO and assigned chemist Robert J. Herschler to research potential uses. Through a lab accident, Herschler discovered DMSO could carry dyes through skin, leading to collaboration with Dr. Stanley Jacob who found it could rapidly enter the body and spread throughout it, regardless of application method.

2. What are the primary ways DMSO can be administered and absorbed by the body?

DMSO can be administered through multiple routes including topical application, oral consumption, intravenous delivery, and direct injection. When applied to the skin, DMSO enters the bloodstream within 5 minutes and reaches bones within an hour. Within 30 minutes of application, DMSO can be found in all tissues of the body, with highest concentrations in plasma, kidney, spleen, lung, heart, and testes.

The absorption is so efficient that over 90% of topically applied DMSO enters the body, with tissue concentrations peaking 1.5 to 2 hours after application. Orally administered DMSO reaches peak blood levels in 4 hours and becomes undetectable after 120 hours, while its metabolite MSM appears after 48 hours and disappears after 400 hours.

3. What is DMSO's safety profile compared to other common medications?

DMSO demonstrates remarkable safety compared to commonly used medications like NSAIDs and opioids. While NSAIDs and opioids each kill tens of thousands of Americans annually, DMSO has not been linked to a single death in over 60 years of widespread use by millions of people. A systematic review of published DMSO studies found only minor and transient side effects, primarily skin irritation and a garlic-like odor.

Even at extremely high doses - 3-30 times the standard dosage taken daily for 90 days - human studies showed no toxicity. Animal studies demonstrated that reaching toxic levels would require drinking roughly two quarts within an hour, which is more than most users consume over two months. This safety profile makes DMSO significantly safer than most conventional medications.

Top Five Uses

Determining the absolute "top five" uses of DMSO is challenging as the sources highlight its remarkable versatility and effectiveness for a vast range of conditions. However, based on the frequency of mentions, the strength of the evidence presented, and the transformative potential of DMSO for these specific areas, here are five prominent uses discussed:

1. **Treating Musculoskeletal Issues:** The sources repeatedly emphasize DMSO's exceptional ability to alleviate pain, reduce inflammation, and accelerate healing for a wide range of musculoskeletal conditions, including:
    - Arthritis (Osteoarthritis and Rheumatoid Arthritis)
    - Bursitis

    - Tendonitis
    - Sprains and Strains
    - Back Pain
    - Sports Injuries
2. **Promoting Wound Healing:** DMSO possesses remarkable wound-healing properties. It can be used to treat:
    - Burns (including severe burns)
    - Surgical Incisions
    - Diabetic Ulcers
    - Pressure Sores
    - Skin Infections
3. **Managing Pain:** DMSO is a potent analgesic and can be used for various types of pain, such as:
    - Chronic Pain
    - Neuropathic Pain (nerve pain)
    - Cancer Pain
    - Headaches
    - Post-Surgical Pain
4. **Treating Neurological Conditions:** DMSO has shown potential in treating a variety of challenging neurological conditions, including:
    - Stroke
    - Spinal Cord Injury
    - Head Trauma
    - Down Syndrome
    - Alzheimer's Disease
5. **Addressing Autoimmune and Connective Tissue Disorders:** The sources present evidence supporting DMSO's use for:
    - Scleroderma
    - Fibromyalgia
    - Interstitial Cystitis
    - Lupus

- Inflammatory Bowel Diseases

The sources consistently portray DMSO as a safe and highly effective therapeutic agent with a broad spectrum of applications. While these five uses represent some of the most prominent areas of discussion, it's essential to recognize that the sources advocate for DMSO's potential in treating many other conditions as well.

4. What are the most common side effects of DMSO?

The two most frequent side effects of DMSO are skin irritation upon topical application and a characteristic garlic or clam-like odor. The skin irritation affects 50-85% of users, particularly those with fair skin, and typically disappears within 10-20 minutes. In roughly 15% of patients, this reaction is "marked," and in 3.5% it is significant enough to stop treatment, though these reactions clear within 10 days of discontinuation.

The garlic-like odor occurs in many users when DMSO is metabolized and the body cannot fully oxidize it, leading to excretion through skin and lungs. This effect typically lasts for a few hours but can persist up to 72 hours in some cases. The odor's intensity often correlates with the dose used and tends to decrease as overall health improves. A very small risk (1 in 1-2000) exists for allergic reactions.

Pets

Widely Used in Veterinary Medicine

- The sources state that DMSO is **fully permitted and widely used in veterinary medicine**, treating many of the same conditions it's used for in humans.
- This widespread use led many Americans to use "veterinary" DMSO for themselves, even though the FDA restricted its use in humans.

Applications for Pets

The sources mention several specific instances of DMSO being used to treat animals:

- **Musculoskeletal Conditions:** A veterinary practice using 90% DMSO reported successful treatment of various musculoskeletal issues in dogs, including:
  - **ACL ruptures:** DMSO halved recovery time after surgical repair, with reduced swelling and pain.
  - **Multiple fractures:** A German Shepherd hit by a truck recovered rapidly after surgery with DMSO.

    - **Prosthetic implant swelling:** DMSO significantly reduced swelling and sensitivity around implants.
    - **Severe tendinitis:** A racing Greyhound with severe tendinitis recovered after DMSO treatment and went on to win races and set track records.
- **Mammary Gland Engorgement:** In 25 dogs with mammary gland engorgement, applying DMSO three times daily led to cessation of lactation and reduced enlargement within three days, faster than standard treatments.
- **Interdigital Cysts:** DMSO, combined with an antibiotic, helped treat interdigital cysts in six dogs, with most achieving complete recovery.
- **Flea Bite Allergies:** DMSO, along with flea elimination measures, provided rapid relief from inflammation and itching caused by flea allergies in 20 dogs and cats.
- **Skin Problems in Cats:** An author reported a case where DMSO lotion successfully treated a cat with severe skin issues, reducing pain, stopping scratching, and promoting healing.
- **Eye Ulcer in a Dog:** A reader reported a case where DMSO cured an eye ulcer in a dog, saving the dog's eye and restoring its sight.
- **Stroke in a Dog:** A reader shared a story of DMSO successfully treating a stroke in their dog.

Horse Studies:

- The sources highlight numerous studies demonstrating DMSO's effectiveness in treating musculoskeletal conditions in horses. These studies provide evidence for its use in veterinary medicine and support its potential benefits for similar conditions in humans.

5. How does DMSO's mechanism of action differ from conventional drugs?

DMSO represents a new therapeutic principle rather than a conventional drug because it alters what enters and exits cells while protecting them from damage. Unlike traditional medications that target specific symptoms or conditions, DMSO acts as a universal solvent that can easily mix with any concentration of water and pass through biological membranes without damaging them - a property unique among known substances.

This fundamental difference allows DMSO to serve multiple functions simultaneously: it acts as an anti-inflammatory agent, improves circulation, carries other substances throughout the body, protects cells

from death under stress conditions, and stabilizes proteins. This broad mechanism of action explains why DMSO can effectively treat such a wide range of conditions and why it often works when conventional treatments fail.

6. What are DMSO's most significant applications in treating neurological conditions?

DMSO demonstrates remarkable effectiveness in treating strokes, traumatic brain injuries, and spinal cord injuries - conditions where conventional medicine offers limited options. In stroke treatment, DMSO can protect brain tissue whether given immediately or hours after the event, and uniquely, it's effective for both ischemic and hemorrhagic strokes. Clinical trials showed that 63% of stroke patients achieved improved or markedly improved neurological status when treated with DMSO within 12 hours of onset.

For spinal cord injuries, DMSO has produced dramatic recoveries even in cases of complete quadriplegia. When administered within 90 minutes of injury, it can prevent paralysis entirely. Even in older injuries, DMSO has shown ability to restore some function. Multiple cases exist of patients regaining mobility after being told they would never walk again, including a sixteen-year-old girl who recovered from complete quadriplegia to walking normally after a year of DMSO treatment.

Buying DMSO

The sources recommend buying DMSO directly from reputable suppliers to ensure purity and quality. Here are the two best options mentioned:

- **DMSOstore.com:** This online retailer specializes in DMSO products and offers a variety of options, including liquid and gel forms in different concentrations.
- **Jacob Lab:** This brand, associated with Dr. Stanley Jacob, a pioneer in DMSO research, is also highly recommended. You can purchase their products directly from their website.

When selecting a supplier, the sources suggest considering these factors:

- **Purity:** Look for DMSO that is at least 99.9% pure.
- **Packaging:** Liquid DMSO should be sold in glass containers to prevent leaching of plastic.
- **Reputation:** Choose a supplier known for quality and customer satisfaction.

Previously, the sources recommended purchasing DMSO from Amazon using links to specific brands. However, due to recent reports of those links redirecting to resellers or products being shipped in non-compliant plastic containers, it is now advised to purchase directly from the manufacturer's website.

It's crucial to use high-quality DMSO from a trusted source to ensure safety and effectiveness.

7. How effective is DMSO in treating pain and inflammatory conditions?

DMSO demonstrates exceptional effectiveness in treating both acute and chronic pain conditions, often providing immediate relief where other treatments have failed. It works through multiple mechanisms: blocking pain signal conduction in nerve fibers, reducing inflammation, relaxing muscles, and improving circulation to affected areas. Studies consistently show an 80-90% success rate in treating various types of pain, from arthritis to failed back surgery syndrome.

The anti-inflammatory effects are particularly noteworthy, as DMSO can often replace both NSAIDs and steroids while being significantly safer. It's especially effective for conditions like bursitis, tendinitis, and arthritis, where studies show most patients experience significant improvement. Professional athletes frequently used DMSO to rapidly recover from injuries that would typically end their season, often returning to play in days rather than months.

8. What evidence exists for DMSO's effectiveness in treating stroke patients?

A 2002 clinical trial demonstrated that DMSO administration within 12 hours of stroke onset resulted in 63% of patients achieving improved or markedly improved neurological status, compared to only 20% improvement in standard treatment groups. This effectiveness was particularly notable given that the study included older patients (average age 65) who typically have worse outcomes with conventional treatments.

Animal studies provide extensive supporting evidence, showing DMSO can protect brain tissue from death even when blood supply is cut off, prevent reperfusion injuries when blood flow returns, and reduce brain swelling. Unlike current stroke treatments which can only be used for ischemic strokes, DMSO is effective for both ischemic and hemorrhagic strokes, eliminating the dangerous delay required for CT scanning before treatment can begin.

Infections

The sources describe several ways **DMSO can be used for infections**, both on its own and in combination with other treatments. Here's what the sources say:

DMSO's Own Antimicrobial Properties:

- DMSO possesses inherent **antibacterial and antifungal properties**.
- An ENT doctor observed that DMSO could **calm inflammation from head infections**, although the improvement often lasted only a few hours. However, when he **mixed DMSO with an antibiotic, the effects were frequently long-lasting**.

Enhancing Antibiotic Effectiveness:

- The sources highlight DMSO's ability to **decrease antibiotic resistance in bacteria**. This suggests that combining DMSO with antibiotics could potentially make them more effective against resistant strains.

Specific Examples of DMSO Use for Infections:

The sources provide numerous examples of DMSO being used successfully for various types of infections:

- **Ear Infections:** The ENT doctor found that a drop of DMSO mixed with an antibiotic, applied directly to the eardrum, was effective for treating otitis media.
- **Sinusitis:** The same doctor observed positive results using DMSO for sinusitis. A Russian study also reported success treating children with maxillary sinusitis using DMSO injections.
- **Throat Infections:** The doctor found that DMSO, applied directly to the inflamed area, was beneficial for throat infections like tonsillitis.
- **Skin Infections:** The sources describe DMSO's effectiveness in treating a range of skin infections, including:
    - Infected wounds
    - Infected mycosis
    - Suppurative diseases of the skin (boils, abscesses)
    - Mastitis (breast infection)
- **Bites:** One author finds DMSO helpful for insect and dog bites. There's also mention of its use for snake bites in animals, with a

reader testimonial suggesting it prevents tissue sloughing after pit viper bites.

DMSO's Role in the Immune Response:

- The sources discuss DMSO's **immunomodulatory effects**. It can **suppress the immune response**, which can be beneficial in certain infections but also potentially problematic if it hinders the body's ability to fight off a strong infection.
- The sources suggest that this immune suppression may be one reason **DMSO is effective against certain autoimmune conditions**.

9. How has DMSO been used to treat sports injuries and trauma?

Professional athletes widely adopted DMSO for treating injuries, as it could often return them to play in days rather than the weeks or months required with conventional treatments. The Oakland Raiders team physician reported using 70% topical DMSO 20-30 times yearly for five years, finding good to excellent results 70-80% of the time, with players returning to play 50-75% faster than with traditional treatments. These results were particularly notable for severe swelling injuries of extremities, especially ankle, elbow, hands, and wrist injuries.

Multiple studies support these observations, showing DMSO's effectiveness for acute traumas like sprains, strains, and contusions. One study of 1371 patients found a 95.04% complete recovery rate for various traumatic injuries. Athletes particularly valued DMSO because it allowed them to continue training despite minor pulls or sprains, though they were cautioned to remain aware of their bodies to avoid masking serious injuries requiring rest.

How to dilute DMSO

The sources provide instructions on how to dilute DMSO, primarily focusing on topical applications. Here's a breakdown:

Starting Point:

- **Begin with 70% DMSO**: This concentration is generally well-tolerated and effective for most applications. You can purchase pre-diluted 70% DMSO or dilute 100% DMSO to reach this concentration.
- **Sensitive areas (face):** Start with 30% DMSO and gradually increase as tolerated.

Dilution Methods:

- **To create a 50% DMSO solution**: Mix five parts of 70% DMSO with two parts of distilled or purified water.
- **To create a 35% DMSO solution:** Mix equal parts of 70% DMSO with distilled or purified water.
- **To create a 33% DMSO solution:** Mix one part 100% DMSO with two parts of distilled or purified water.

Important Notes:

- **Always use distilled or purified water for dilution.** Tap water may contain impurities that could react with DMSO or be introduced into the body.
- **DMSO generates heat when mixed with water**. This is a normal chemical reaction and doesn't affect the efficacy or safety of the solution.
- **Store diluted DMSO in a glass container with a DMSO-resistant cap.** Avoid using plastic containers, as DMSO can dissolve certain types of plastic.
- **Label the container clearly with the concentration and date of dilution.**

The sources emphasize that the appropriate concentration of DMSO can vary depending on the individual and the specific condition being treated. Start with a lower concentration and gradually increase as needed, paying close attention to any skin reactions.

10. What role does DMSO play in treating autoimmune conditions?

DMSO has shown remarkable effectiveness in treating various autoimmune conditions through its powerful yet safe anti-inflammatory properties. It has successfully treated conditions including asthma, inflammatory bowel diseases (ulcerative colitis and irritable bowel syndrome), interstitial cystitis, ITP, lupus, multiple sclerosis, myasthenia gravis, scleroderma, Sjögren's syndrome, and uveitis. The compound's ability to reduce inflammation while modulating immune response makes it uniquely suited for these conditions.

Research suggests DMSO's effectiveness in autoimmune conditions may be linked to its ability to inhibit pleomorphic bacteria, which some researchers believe play a role in triggering autoimmune responses. Studies show 10-15% of chronic illnesses, including blood clots and cancers, may have a pleomorphic etiology, and DMSO's ability to address

these underlying causes rather than just symptoms may explain its broad effectiveness in autoimmune conditions.

11. How has DMSO been used to treat Down Syndrome and what were the results?

Clinical trials in the 1970s demonstrated remarkable improvements in children with Down Syndrome treated with DMSO. In Oregon, 67 moderately or severely mentally disabled children with Down Syndrome received varying doses of DMSO, showing dose-dependent improvements. A Chilean study of 55 children showed significant improvements in development scores, with documented cases of children progressing from vegetative states to walking, talking, and achieving academic milestones previously thought impossible.

One particularly notable case was Melody Clark, who at 11 months couldn't stand or walk and had classic Down Syndrome symptoms. After DMSO treatment, by age eight she could walk, run, talk, read, and spell almost normally - functioning at a second-grade level and excelling in arithmetic. Similar results were seen in other cases, including Billy King, who progressed from having the mental capacity of a ten-month-old to that of a seven-year-old after two years of treatment.

12. What success has DMSO shown in treating scleroderma?

Scleroderma studies demonstrated significant success rates with DMSO treatment. Of 42 patients with chronic scleroderma who hadn't responded to previous treatments, 26 showed good or excellent improvement. DMSO caused complete remissions in three patients, while nine had to resume treatment when symptoms returned. The treatment was particularly effective when started earlier in the disease process, with many patients experiencing softening of skin, improved joint motion, and healing of persistent ulcers.

A Russian study of 52 women and 6 men with progressive scleroderma showed even more impressive results. DMSO stopped disease progression in all but 2 patients (96.6%), and clinical recovery occurred in 34 of 40 patients with plaque scleroderma. Of 40 patients who completed the treatment course, none experienced relapses during the five-year follow-up period, demonstrating DMSO's potential for long-term disease management.

Chronic Pain

When choosing a type of DMSO for chronic pain and deciding how to apply it, consider these points from the sources:

- **Topical DMSO is generally recommended for chronic pain.**

- **DMSO is available in liquid and gel forms.** Liquids allow for greater control over the dosage and may be less irritating to the skin, but gels are easier to apply and provide a sustained release of DMSO.
- **Clean the area before applying DMSO and allow it to dry before contact with anything else.** This prevents potentially harmful substances from being pulled into the body.
- **Start with a lower concentration (30-50%) and gradually increase as tolerated.** The face is particularly sensitive and requires lower concentrations.
- **Chronic pain often takes longer to respond to DMSO than acute pain.** While acute pain can improve rapidly, you may need 4-7 days of consistent applications to see improvement in chronic pain, and it could take 6-8 weeks for lasting relief.
- **Consider oral DMSO if topical application is not effective or if the pain is systemic.** However, the gastrointestinal tract is sensitive to higher DMSO concentrations, so starting with a low oral dose is recommended.

Specific instructions for topical application of DMSO:

- **Liquid DMSO:** You can apply liquid DMSO directly to the skin using a natural hair paintbrush or by dipping your finger in the liquid and rubbing it onto the affected area.
- **Gel DMSO:** Rub the gel into the affected area.

Remember: It's important to patch test before using DMSO, especially if using it orally, to check for any allergic reactions. More detailed instructions on using DMSO, both topically and orally, can be found in the sources.

13. How effective is DMSO for treating burn injuries?

DMSO shows remarkable effectiveness in treating burns of various severities. A study of 1,371 patients with skin disorders, including 173 with second or third-degree burns, showed a 95.04% complete recovery rate using DMSO spray. When applied within minutes of a burn, DMSO typically stops pain immediately, prevents blistering, and promotes full recovery without scarring or skin contractures.

One extraordinary case involved a six-year-old girl who severely burned her finger in an electrical socket, cooking it through until the tip was ash white. Within 30 minutes of immersion in full-strength DMSO, the pain disappeared, the next day the finger turned pink, and rather than being lost, it fully recovered. These results have been consistently replicated

across numerous cases, with DMSO preventing both immediate damage and long-term complications from burns.

14. What evidence exists for DMSO's effectiveness in treating eye conditions?

Studies have shown DMSO's effectiveness in treating various eye conditions, including macular degeneration and retinitis pigmentosa. In one study of 50 patients with these conditions, 22 experienced improved visual acuity, 9 showed improved visual fields, and 5 demonstrated improved dark adaptation. Some patients with severe vision loss, including cases of complete blindness, experienced significant vision restoration after DMSO treatment.

Safety studies consistently showed no adverse effects from DMSO application to eyes, contrary to early FDA concerns. Clinical observations revealed DMSO could protect eyes from radiation damage, reduce inflammation, and improve various forms of eye disease. Multiple documented cases exist of patients regaining sight after years of blindness, including a man who regained vision after being blind for over 30 years following a dynamite explosion.

Dental Uses

The sources highlight several promising applications of DMSO in dentistry, suggesting it can be a valuable tool for managing pain, inflammation, infections, and promoting healing within the oral cavity:

DMSO as a Mouthwash or Toothpaste: Many individuals find DMSO to be an effective mouthwash or toothpaste, noting its ability to reduce bleeding gums and improve overall oral hygiene.

Pain Relief:

- DMSO can provide **temporary relief from toothaches** until a dentist can be seen.
- Swishing with a diluted DMSO solution can alleviate pain in the oral cavity.
- Dentists have reported using DMSO successfully to manage pain after dental procedures, including extractions and restorative work.

Infection Control:

- DMSO has inherent **antibacterial properties** and can **enhance the effectiveness of antibiotics**. This makes it a useful adjunct in treating oral infections.

- Dentists have reported using DMSO (alone or with antibiotics) to treat infections and swelling in the mouth.

Periodontal Disease:

- Multiple studies and anecdotal reports suggest DMSO's effectiveness in treating periodontal disease.
- A 1969 Polish study found that DMSO significantly **improved symptoms of periodontal disease**, including pain, bleeding, and gum adherence.
- Some dentists use DMSO to **stabilize teeth loosened by periodontitis**.

Other Dental Applications:

- **Post-Extraction Healing:** Dentists have reported using DMSO in empty tooth sockets after extractions to reduce swelling and promote healing.
- **Pulpitis:** Several studies have demonstrated DMSO's efficacy in treating pulpitis (inflammation of the dental pulp).
- **Dry Socket:** A Russian study found that a mixture containing DMSO accelerated healing of dry socket (a painful complication after tooth extraction).
- **Periodontosis:** A Russian study reported success using DMSO with azathioprine to treat periodontosis.

Specific Studies and Reports:

- The sources cite numerous Russian and Bulgarian studies from the 1980s and 1990s demonstrating DMSO's effectiveness in treating various dental conditions, including deep caries, generalized periodontitis, and inflammation of the salivary glands.
- Stanley Jacob, a pioneer in DMSO research, reported on a dentist who consistently eliminated post-procedure pain by applying DMSO to the gums.
- Another author described dentists using DMSO for pain, infections, and swelling, and for preventing damage from X-rays.

15. How has DMSO been used to treat internal organ disorders?

DMSO demonstrates significant effectiveness in treating various internal organ conditions, particularly those involving inflammation or reduced blood flow. For liver conditions, studies show DMSO can prevent and treat liver damage from various causes, including toxins and cirrhosis. In one study of 12 terminal liver cirrhosis patients who stopped drinking

alcohol, DMSO treatment resulted in improved health and liver function in all eight patients who completed the six-month program.

In treating pancreatic conditions, DMSO has shown remarkable results with pancreatitis. A randomized double-blind trial of 78 patients with chronic recurring pancreatitis found that those receiving DMSO were completely pain-free within 24 hours, compared to 48% of controls still experiencing pain after five days. Similar positive results have been documented for kidney conditions, including kidney stones and various forms of nephritis.

Burn Injuries

When using DMSO to treat burn injuries, there are a few key points to consider from the sources:

- **DMSO is incredibly effective for burns when applied quickly after the injury.** It can prevent injured tissue from dying, reduce pain, prevent blistering, and promote full recovery without scarring.
- **Topical application is the recommended route of administration for burn injuries.**
- **Use a high concentration of DMSO (70-90%) for best results.**
- **Apply DMSO liberally to the affected area.** Soaking a gauze pad in DMSO and placing it on the burn is a good option, or you can apply liquid DMSO directly to the burn using a natural hair paintbrush.
- **Repeat application every 2-3 hours, especially in the initial stages.**

Here are some examples from the sources of how DMSO has been used successfully to treat burns:

- A six-year-old girl burned her finger on a light socket. The finger was "cooked through and burned ash white at the tip." Full-strength DMSO was applied to the finger within 30 minutes of the injury. After 20 minutes, the pain disappeared, and the finger fully recovered.
- A 1985 study by Russian burn specialists found that DMSO was superior to other treatment options (nitrofurazone, trimecaine, and monomycin) for treating burns in adolescents.
- A large study of chronic skin wounds, including burns, found that **95.04% of patients had a complete recovery (with no scarring) after using DMSO**.

The sources emphasize that DMSO's effectiveness for burns depends on the speed of application. The sooner DMSO is applied after a burn injury, the better the outcome.

16. How did DMSO transition from industrial solvent to medical treatment?

Crown Zellerbach, seeking uses for their paper manufacturing byproduct, assigned chemist Robert Herschler to study DMSO in the 1950s. Through a laboratory accident, Herschler discovered DMSO could carry dyes through skin, leading him to connect with Dr. Stanley Jacob at Oregon Health Sciences University. Jacob, who was researching organ preservation, immediately recognized DMSO's revolutionary potential when he noticed he could taste iodine mixed with DMSO applied to his skin.

This discovery led Jacob to shift his focus entirely to DMSO research, conducting numerous experiments and treating patients with various conditions. Initial successes with burns, sprains, and arthritis led to broader experimentation, revealing DMSO's remarkable versatility in treating numerous conditions. The transition accelerated as both medical professionals and the public began experiencing dramatic results, leading to widespread adoption before FDA intervention.

17. What role did Crown Zellerbach play in DMSO's development?

Crown Zellerbach, as the world's largest producer of DMSO, played a crucial role in its medical development. The company not only funded initial research but also collaborated with the University of Oregon to patent medical uses of DMSO. However, their approach to licensing created challenges when they chose to work with six major pharmaceutical companies simultaneously, rather than focusing on one or two as advised.

This decision led to a chaotic situation where multiple companies competed to be first to market, creating an atmosphere of urgency the FDA hadn't previously encountered. The resulting pressure and complexity may have contributed to the FDA's resistant stance. Crown Zellerbach's involvement ended abruptly when the FDA terminated their investigational new drug application in September 1965, effectively halting their role in DMSO's medical development.

18. How did the thalidomide crisis impact DMSO's regulatory journey?

The thalidomide crisis profoundly affected DMSO's regulatory journey through its impact on FDA policy and personnel. Frances Kelsey's

successful blocking of thalidomide led to the 1962 Kefauver-Harris Amendment, requiring drug manufacturers to prove both safety and efficacy before approval. This new requirement, coupled with the FDA's restrictive interpretation of "well-controlled" studies as requiring double-blind trials, created significant obstacles for DMSO approval.

The crisis also affected FDA culture, as officials sought recognition similar to Kelsey's by finding the "next thalidomide" to stop. This mentality contributed to the FDA's aggressive stance against DMSO, despite its proven safety profile. The amendment's implementation dramatically slowed new drug approvals and created a regulatory environment where promising but unconventional treatments faced increasingly difficult approval pathways.

Eye Conditions

When considering DMSO for eye conditions, here's what the sources say:

- **DMSO can potentially improve vision and treat various eye conditions**, including macular degeneration, retinitis pigmentosa, cataracts, glaucoma, and eye inflammation.
- **Topical application is generally recommended for eye conditions**. This allows for a higher concentration of DMSO to reach the eye.
- **Use a lower concentration of DMSO for eye drops (15-50%) than for other topical applications.** The eyes are sensitive, and higher concentrations can cause temporary burning or irritation.
- **Always use sterile DMSO when applying it to the eyes**.

Specific instructions for applying DMSO eye drops:

- **Prepare a sterile DMSO solution in the desired concentration.** This can be done by mixing sterile DMSO liquid with sterile water or saline solution.
- **Wash your hands thoroughly**.
- **Using a sterile dropper, place 1-2 drops of the DMSO solution into the affected eye**.
- **Close your eye and gently roll your eyeball to distribute the solution**.
- **Repeat application as needed**.

Important Considerations:

- **DMSO can cause a temporary stinging sensation when applied to the eyes**. This typically lasts for 30-40 seconds and then subsides.
- **It's essential to consult with an eye care professional before using DMSO for any eye condition.** They can help determine the appropriate concentration and frequency of application and monitor for any potential side effects.
- **The sources contain numerous anecdotal reports and case studies of individuals experiencing vision improvement and relief from eye conditions after using DMSO.** However, more controlled clinical studies are needed to confirm these findings.

The sources emphasize the potential benefits of DMSO for eye conditions, but caution is advised due to the sensitive nature of the eyes.

19. What was the initial public and medical community response to DMSO?

The initial response to DMSO was overwhelmingly positive from both the public and many medical professionals. Patients experiencing dramatic recoveries from various conditions spread word of DMSO's effectiveness, leading to widespread demand. By 1965, over 100,000 people were using DMSO, and numerous doctors began incorporating it into their practices. Professional athletes openly endorsed it, and gas stations across America advertised its availability.

However, the medical establishment showed mixed reactions. While many doctors embraced DMSO after witnessing its effectiveness, others, particularly in academic medicine, were hostile to Jacob's work. Some colleagues called him a "quack" and "charlatan," particularly after media coverage brought public attention to DMSO before extensive peer review. This division within the medical community would continue throughout DMSO's development.

20. How did international adoption of DMSO differ from US adoption?

International adoption of DMSO proceeded more smoothly than in the United States, with many countries maintaining its availability while the FDA restricted it. Germany, Austria, and Switzerland approved DMSO for various topical applications, while Canada approved it for scleroderma. The Soviet Union began using it in 1971, and various South American countries incorporated it into their medical systems.

This international acceptance was particularly evident at research symposiums, where European scientists showed much more openness to DMSO than their American counterparts. The 1965 German symposium demonstrated this contrast, with 150 European participants showing great interest while American researchers remained constrained by FDA restrictions. This international-US divide persists today, with DMSO remaining more widely available and accepted in many other countries.

21. What key events led to DMSO's only FDA approval for interstitial cystitis?

In 1978, DMSO gained its sole FDA approval for treating interstitial cystitis through an unusual process. A committee assigned to evaluate DMSO took a different approach than previous reviews, focusing on patients with chronic interstitial cystitis who had failed all other treatments. Instead of requiring impossible standards, they accepted the improvement of these treatment-resistant patients as sufficient evidence of efficacy.

However, controversy emerged when it was discovered the trial had procedural issues, including missing records and lack of proper approvals. Despite these problems, the FDA maintained the approval after determining the investigators were merely careless rather than fraudulent. This decision proved significant as the FDA rarely reverses approvals, though the controversy made the agency even more resistant to approving DMSO for other conditions.

22. How did the black market for DMSO develop?

After the FDA's 1965 research ban, a significant black market emerged as patients who had experienced DMSO's benefits sought to continue treatment. People obtained DMSO from various sources, including veterinary supplies, industrial sources, and even gas stations that openly advertised its availability. The black market thrived because DMSO remained legal for industrial and veterinary use, making it relatively easy to obtain despite medical restrictions.

Cross-border treatment centers also emerged, particularly in Mexico, where DMSO clinics treated thousands of American patients daily. One Tijuana clinic alone treated 30,000 Americans in 1979, generating over 20 million dollars annually. This demonstrated both the persistent demand for DMSO and patients' willingness to seek treatment outside official channels when denied access through the conventional medical system.

23. What role did media coverage play in DMSO's story?

Media coverage significantly influenced DMSO's journey, beginning with a 1963 Portland newspaper story that led to national attention. The New York Times published multiple front-page articles, including an April 1965 editorial calling DMSO "the nearest thing to a wonder drug the nineteen-sixties have produced." This coverage helped spread awareness and increase demand, but also contributed to tension with the medical establishment who felt proper scientific channels were being bypassed.

Television played a particularly powerful role, especially Mike Wallace's 60 Minutes segments in 1980, which sparked renewed national interest and led to Congressional hearings. The program was so impactful that Jacob's university had to hire twelve additional phone operators to handle the surge in inquiries. However, media coverage also complicated DMSO's regulatory journey, as the FDA often cited "premature" public attention as problematic.

24. How did different states approach DMSO legislation?

Several states bypassed federal restrictions by passing their own legislation legalizing DMSO use. Florida led this movement in 1977, followed by Oregon in 1979, and several other states including Louisiana, Montana, Texas, and Washington. These laws protected doctors' rights to prescribe DMSO within their states, though they generally couldn't advertise this service. Patients from across the country would travel to these states to receive DMSO treatment.

This state-level action represented a significant challenge to FDA authority and demonstrated growing frustration with federal restrictions on DMSO access. However, not all state efforts succeeded; some states like Connecticut attempted but failed to pass similar legislation. The varying success of these efforts highlighted the tension between state and federal authority in medical regulation.

25. What was the timeline of major DMSO research symposiums and their findings?

The first major DMSO symposium occurred in March 1966 at New York's Waldorf Astoria Hotel, organized by the New York Academy of Sciences despite FDA pressure to cancel it. Over 1,000 researchers attended, presenting 82 papers demonstrating DMSO's safety and efficacy. Notably, no researchers withdrew their papers even after the FDA's crackdown, showing strong scientific support for DMSO.

Subsequent symposiums included the November 1966 Vienna conference, which attracted 150 scientists from twelve countries and covered data from over 10,000 patients. Additional New York

symposiums followed in 1974 and 1982, consistently reporting favorable results. These gatherings provided crucial platforms for sharing research and maintaining scientific momentum despite regulatory obstacles, though their findings had limited impact on FDA policy.

26. How did FDA Commissioner Goddard's actions affect DMSO's development?

James Goddard's tenure as FDA Commissioner marked a crucial turning point in DMSO's history. He used DMSO as a vehicle to expand FDA's enforcement powers, implementing aggressive police-state tactics against researchers and doctors. Under his leadership, the FDA initiated no-knock raids, threatened scientists with criminal prosecution, and used media manipulation to discourage DMSO research and use.

Goddard's approach effectively intimidated the medical community, causing many physicians to abandon DMSO research and treatment. His actions established a precedent for FDA conduct that continued long after his departure. Despite his relatively short 28-month tenure, Goddard's aggressive policies created lasting obstacles to DMSO development and set patterns of FDA behavior that persist today.

27. What were the FDA's main arguments against DMSO approval?

The FDA's primary argument against DMSO centered on claiming insufficient evidence from "well-controlled" studies, specifically defining this as double-blind trials. This requirement posed a particular challenge for DMSO because its distinctive garlic-like odor and skin reactions made true blinding impossible. The agency also cited concerns about eye toxicity, though this was based on animal studies using extremely high doses and was never observed in humans.

These arguments persisted despite extensive evidence of DMSO's safety and efficacy, including data from over 100,000 patients. When pressed in Congressional hearings, FDA officials would frequently cite these same points while avoiding discussion of the substantial body of positive evidence. This pattern suggested the agency's opposition was more bureaucratic than scientific.

28. How did the 1962 Kefauver-Harris Amendment impact DMSO regulation?

The Kefauver-Harris Amendment, passed in response to the thalidomide crisis, fundamentally altered drug approval requirements by mandating proof of both safety and efficacy. While well-intentioned, this legislation gave the FDA broad discretion in defining "substantial evidence" of efficacy. The FDA's subsequent interpretation requiring double-blind

trials created particular challenges for DMSO, as its unique properties made such trials impractical.

Additionally, the amendment dramatically increased the cost and complexity of drug approval, effectively creating a pay-to-play system favoring large pharmaceutical companies. This especially impacted natural or unpatentable substances like DMSO, as the multi-billion dollar cost of bringing new drugs to market made it economically unfeasible to pursue approval without patent protection.

29. What role did Congress play in the DMSO controversy?

Congress repeatedly attempted to address the FDA's stonewalling of DMSO through hearings and investigations. Notable hearings in 1980 featured compelling testimony from doctors, patients, and researchers about DMSO's benefits and the FDA's obstruction. Several Congress members actively championed DMSO's cause, introducing multiple resolutions to legalize it and challenging the FDA's regulatory approach.

Despite these efforts, Congress ultimately proved unable to overcome FDA resistance. The hearings clearly demonstrated the agency's arbitrary standards and inconsistent handling of DMSO applications, but produced no meaningful policy changes. This highlighted the limitations of Congressional oversight in affecting FDA decision-making, even with clear evidence of agency overreach.

30. How did pharmaceutical companies respond to DMSO's potential?

Initially, pharmaceutical companies showed great interest in DMSO, with six major companies (including Merck, Squibb, and Syntex) investing heavily in its development. These companies conducted extensive research and submitted multiple new drug applications. However, after the FDA's 1965 crackdown, they largely abandoned DMSO research, fearing regulatory retaliation that could affect their other products.

Many company executives privately acknowledged DMSO's value but felt unable to challenge the FDA's position. This demonstrated how regulatory pressure could effectively discourage even large pharmaceutical companies from pursuing promising treatments. Eventually, some companies found ways to use DMSO as a "vehicle" in other approved products, but abandoned efforts to develop it as a standalone treatment.

31. What methods did the FDA use to discourage DMSO research?

The FDA employed multiple tactics to discourage DMSO research, including aggressive enforcement actions against researchers and doctors. They conducted intimidating inspections, copied personal correspondence without permission, and threatened criminal prosecution. The agency also used "selective prosecution" to make examples of certain researchers, effectively warning others away from DMSO research. These actions went far beyond normal regulatory oversight, creating an atmosphere of fear in the medical community.

The FDA also employed media manipulation, issuing misleading "white papers" and fact sheets about DMSO's supposed dangers while refusing to provide supporting evidence. They blacklisted investigators, threatened scientists with court action, and used questionable methods to control the medical profession's actions. Many researchers abandoned DMSO studies not because of scientific concerns, but due to fear of professional consequences.

32. How did the FDA's approach to DMSO change over time?

Initially, the FDA's resistance to DMSO stemmed from concerns about being overwhelmed by numerous potential applications. Under Goddard's leadership, this evolved into an aggressive campaign to establish FDA authority over medical practice. Later commissioners maintained the anti-DMSO stance despite acknowledging they lacked solid information about the drug's dangers, suggesting institutional inertia rather than scientific evidence drove continued opposition.

By the 1980s, the FDA's position softened slightly, allowing limited research and approving DMSO for interstitial cystitis. However, the agency maintained most of its restrictions until the passage of the Dietary Supplement Health and Education Act of 1994, which effectively ended the FDA's ability to prohibit DMSO use as a natural substance. Yet by then, much of the momentum for DMSO research and development had been lost.

33. What legal challenges emerged around DMSO use?

Legal challenges around DMSO centered on conflicts between federal prohibition and state-level legalization. Several states passed laws protecting doctors' rights to prescribe DMSO, creating jurisdictional conflicts with federal regulation. Additionally, court cases challenged the FDA's authority to regulate how doctors practice medicine, with some courts ruling the agency had exceeded its statutory authority.

A significant legal battle involved Stanley Jacob himself, who faced federal prosecution for allegedly bribing an FDA official. The case ended in acquittal and a DOJ apology, but cost Jacob hundreds of thousands in legal fees and drove him to bankruptcy. This case exemplified how legal challenges could be used to discourage DMSO advocacy, even when allegations proved baseless.

34. How did state rights conflict with federal authority regarding DMSO?

The conflict between state and federal authority manifested primarily through state legislation legalizing DMSO use within their borders, directly challenging FDA restrictions. States like Florida, Oregon, Louisiana, and others passed laws protecting physicians' rights to prescribe DMSO, creating a complex legal landscape where the treatment could be legal at the state level while federally prohibited.

This state-federal tension highlighted broader questions about medical regulation and states' rights to determine healthcare policies. The situation created practical challenges for doctors and patients, who had to navigate conflicting regulatory frameworks. Some states became havens for DMSO treatment, with patients traveling across state lines to access care, demonstrating how federal restrictions could be partially circumvented through state action.

35. What impact did FDA's handling of DMSO have on medical freedom?

The FDA's handling of DMSO established concerning precedents for medical freedom, demonstrating how regulatory authority could be used to restrict access to promising treatments despite substantial evidence of safety and efficacy. The agency's actions showed how administrative interpretation of regulations could effectively prevent physicians from using their professional judgment in treating patients, even when conventional treatments had failed.

This case illustrated the broader implications of centralized medical regulation, showing how agency decisions could override both physician expertise and patient choice. The DMSO controversy highlighted tensions between regulatory protection and medical freedom, raising questions about the appropriate balance between safety oversight and treatment access that remain relevant today.

36. What were the most significant DMSO studies and their findings?

Major studies consistently demonstrated DMSO's effectiveness across multiple conditions. The 1966 New York Academy of Sciences

symposium presented 82 papers showing positive results in treating conditions ranging from stroke to arthritis. Studies involving thousands of patients showed 80-90% success rates in treating various forms of pain and inflammation, with particularly strong results in sports injuries and trauma.

Clinical trials demonstrated DMSO's effectiveness in treating stroke patients, with 63% showing significant improvement when treated within 12 hours. Studies of burn victims showed 95% complete recovery rates, while research on spinal cord injuries demonstrated unprecedented success in preventing paralysis when administered promptly. These findings were replicated across multiple research centers and countries, creating a substantial body of evidence supporting DMSO's therapeutic value.

37. Why was double-blind testing problematic for DMSO?

Double-blind testing proved particularly challenging for DMSO due to its distinctive properties. The compound's characteristic garlic-like odor and tendency to cause skin reactions made it impossible to truly blind either patients or researchers to who received the active treatment. Additionally, DMSO's systemic absorption meant that applying it to one part of the body for comparison with a placebo on another part was ineffective, as the compound would affect both areas.

These inherent characteristics conflicted with the FDA's rigid interpretation of "well-controlled" studies as requiring double-blind protocols. Despite extensive evidence from other types of studies, the FDA's insistence on double-blind trials created an impossible standard for DMSO approval, highlighting how regulatory requirements could be misaligned with the practical realities of certain treatments.

38. What animal studies demonstrated DMSO's safety and efficacy?

Extensive animal studies across at least 11 different species demonstrated DMSO's remarkable safety profile. Studies showed animals could survive extraordinarily high doses, with toxicity levels far above any therapeutic dose. Even when tissue injury occurred at extreme doses, it typically reversed within a week. These studies were particularly extensive because the FDA's opposition prompted researchers to conduct far more safety testing than typical for most drugs.

Animal research also provided crucial evidence of DMSO's effectiveness in treating various conditions. Studies showed DMSO could prevent paralysis in animals with spinal cord injuries, protect against stroke damage, and accelerate healing of burns and wounds. These results were consistently reproduced across different species and research centers,

providing strong preclinical support for DMSO's therapeutic applications.

39. How extensive was the research into DMSO's toxicology?

DMSO underwent unusually comprehensive toxicology testing, partly due to FDA scrutiny. A landmark study involving 78 prisoners who received 3-30 times the normal dose for 90 days showed no significant toxicity. This study included extensive monitoring of blood work, eyes, EEG, bone marrow, EKG, and cerebral spinal fluid, finding only minor transient changes.

By 1991, over 3,000 clinical studies involving more than 500,000 patients had been conducted, making DMSO one of the most thoroughly researched substances in medical history. Despite this extensive testing revealing an exceptional safety profile, the FDA continued to cite toxicity concerns, suggesting their opposition was based on factors other than scientific evidence.

40. What international research supported DMSO's medical use?

International research provided substantial support for DMSO's medical applications. German, Austrian, and Swiss studies demonstrated its effectiveness for various conditions, while Soviet research beginning in 1971 showed positive results across multiple applications. South American studies provided particularly compelling evidence for DMSO's ability to treat developmental disabilities, including Down Syndrome.

Research symposiums in Vienna and other international locations brought together scientists from numerous countries, generating data from thousands of patients. These international studies often showed more positive results than U.S. research, possibly because they weren't constrained by FDA restrictions. This international body of evidence highlighted the disparity between global and U.S. approaches to DMSO research and use.

41. How did research protocols for DMSO evolve over time?

Research protocols initially focused on treating specific conditions like arthritis and burns, with physicians having significant latitude in administration methods. After the FDA's 1965 intervention, protocols became more restrictive, requiring detailed documentation and limiting patient numbers. This shift from practical clinical research to highly controlled studies made it more difficult to discover new applications or treat urgent cases.

The evolution of protocols also reflected changing regulatory requirements. Early studies often relied on case series and clinical

observations, while later research attempted to conform to FDA demands for controlled trials. This evolution created a paradox where the most compelling evidence came from earlier, more flexible studies, while later, more restricted research struggled to demonstrate effects that were obvious in clinical practice.

42. What evidence supported DMSO's ability to cross biological barriers?

Studies showed DMSO could enter the bloodstream within 5 minutes of skin application and reach bones within an hour. Radio-labeled DMSO studies demonstrated it entered all tissues within 30 minutes, with highest concentrations in plasma, kidney, spleen, lung, heart, and testes. This remarkable penetration ability was unique among known substances, as DMSO could pass through biological membranes without damaging them.

The ability to cross the blood-brain barrier proved particularly significant, allowing DMSO to reach brain tissue in stroke and injury cases. Laboratory studies revealed DMSO's unique molecular structure, with both polar and non-polar regions, enabled this penetration. This property also made DMSO valuable as a carrier for other medications, enhancing their delivery to target tissues.

43. How did research methodology challenges affect DMSO's approval process?

The FDA's insistence on double-blind studies created an insurmountable methodological challenge for DMSO approval. The compound's distinctive odor and immediate effects made true blinding impossible, yet the FDA refused to accept alternative study designs despite their scientific validity. This methodological impasse effectively prevented DMSO from meeting approval requirements, regardless of actual efficacy.

Additionally, DMSO's variable dosing requirements complicated research design. Different patients required different concentrations and application frequencies for optimal results, making standardized protocols less effective. The contrast between successful clinical use and difficulties in formal study designs highlighted the limitations of rigid research methodologies in evaluating certain treatments.

44. What was Stanley Jacob's role in DMSO development and advocacy?

Stanley Jacob emerged as DMSO's primary medical pioneer and advocate after discovering its therapeutic potential while researching organ preservation. His intellectual capacity allowed him to maintain his

duties as a surgery professor while coordinating global DMSO research and treating thousands of patients. Jacob's dedication led to numerous breakthrough discoveries about DMSO's applications, particularly in treating otherwise incurable conditions.

Despite facing professional ostracism and FDA harassment, Jacob continued advocating for DMSO for decades. He testified before Congress, published extensive research, and treated patients who traveled from around the world. Even when faced with bankruptcy from legal defense costs, he maintained his commitment to making DMSO available to those who needed it.

45. How did Dr. Jack de la Torre's research advance DMSO understanding?

Dr. de la Torre's research in the early 1970s dramatically demonstrated DMSO's potential for treating brain trauma. His groundbreaking experiments showed DMSO could prevent death and disability in animals with severe brain injuries that typically proved fatal. This work revealed DMSO's unique ability to protect brain tissue from damage and reduce swelling, offering hope for treating previously untreatable conditions.

Over eight years at the University of Chicago, de la Torre authored over 200 publications documenting DMSO's effectiveness in treating brain and spinal cord injuries. His research suggested millions could be spared from disability if DMSO were adopted as standard treatment for strokes and trauma. Despite these remarkable findings, institutional resistance prevented widespread implementation of his protocols.

46. What role did Robert Herschler play in DMSO's discovery and development?

Robert Herschler made the initial breakthrough discovery of DMSO's ability to penetrate skin while working as a Crown Zellerbach chemist. His observation that DMSO could carry dyes through skin led to collaboration with Stanley Jacob, launching DMSO's medical applications. Herschler continued researching DMSO's properties and potential uses, contributing to understanding its fundamental mechanisms.

Herschler became a vocal advocate for DMSO, particularly criticizing regulatory obstacles. He characterized FDA resistance as "bureaucratic Mickey Mouse" harming American healthcare, and helped maintain industrial production of DMSO, ensuring continued availability despite medical restrictions. His industrial chemistry background provided crucial technical expertise supporting DMSO's development.

47. How did Frances Kelsey influence DMSO's regulatory journey?

Frances Kelsey's role in preventing thalidomide approval significantly impacted DMSO's regulatory fate. Her success led to the 1962 Kefauver-Harris Amendment requiring proof of drug efficacy, dramatically changing approval requirements. When approached about DMSO, Kelsey expressed concern about managing multiple potential applications, contributing to initial FDA resistance.

Kelsey's status as a hero of the thalidomide crisis influenced other FDA officials who sought similar recognition by blocking potentially dangerous drugs. This created an institutional bias toward rejection, particularly affecting novel treatments like DMSO that didn't fit traditional pharmaceutical models. The resulting regulatory framework prioritized avoiding potential risks over enabling access to promising treatments.

48. What was Pat McGrady's contribution to the DMSO story?

Pat McGrady provided crucial documentation of DMSO's history and the FDA's actions against it. His detailed reporting and interviews with key figures, including FDA commissioners, helped preserve the historical record of DMSO's development and suppression. His work revealed inconsistencies in FDA positions and documented the impact of regulatory decisions on patient access to treatment.

McGrady's investigations highlighted how FDA officials often lacked solid information about DMSO while maintaining opposition to its use. His reporting showed how institutional politics rather than scientific evidence drove regulatory decisions, providing valuable insight into bureaucratic obstacles facing medical innovations.

49. How did various medical institutions approach DMSO research?

Medical institutions showed varying responses to DMSO research. While some, like Oregon Health Sciences University under Dean Baird, supported investigation despite controversy, many institutions became hesitant after FDA opposition emerged. This division reflected broader tensions between clinical observation and regulatory compliance, with institutional priorities often favoring regulatory conformity over clinical innovation.

Research centers conducting DMSO studies often found themselves caught between compelling clinical results and regulatory pressures. Some institutions continued research through state-level legal protection, while others abandoned promising studies due to federal

pressure. This institutional response pattern demonstrated how regulatory policy could effectively suppress medical research despite positive clinical evidence.

50. What role did medical schools play in DMSO research and development?

Medical schools initially provided crucial support for DMSO research, with Oregon Health Sciences University being particularly important as Stanley Jacob's base of operations. However, as FDA opposition intensified, many medical schools became reluctant to risk their federal funding and accreditation by supporting DMSO research.

This institutional retreat highlighted broader challenges in medical education and research, where regulatory compliance often superseded clinical investigation. Some schools maintained limited DMSO research through state protection or specific approved applications, but the general trend showed how institutional dependence on federal funding could effectively control research directions, regardless of clinical promise.

DMSO Nature's Healer

By Dr Morton Walker – Unbekoming Book Summary

AMD recently said:

If I were stranded on a desert island or knew the world was ending and I could only bring a few therapies with me, one of them, without a doubt, would be DMSO.

This for a reader, Judy:

I'm using DMSO both orally and topically. Not for blood pressure, just general use. I have several books on it. Some individuals have used it for over 40 years. I view it as something that stabilizes body systems. I use it on my knees and hips to ward off arthritis.

This from Dr Robert Yoho:

I started using it and am hoping to improve my eyes and ankle arthritis and possibly even get rid of some mercury to improve my neurological status. I sound gullible, and you are about to think I lost my head again. How could one medicine have so many healing effects?...DMSO is a biological product that should be called "Natural Tree Sap Therapy." But that is in an alternative universe, and dimethyl sulfoxide sounds nasty...More than 12,000 scientific articles about the use of DMSO and 28,000 about its chemistry have been published that support DMSO's usefulness and safety. No confirmed reports of fatalities exist.

This from Karen Brennan, PhD

I am working on a home remedy kit that includes the basics, such as CDS, DMSO, Boron, collodial sliver, hydrogen peroxide and baking soda for a variety of health ailments...I have come to realize that we only need to keep on hand several of these solutions for emergency use since they are so valuable in numerous instances.

With all that said, let's start with an analogy.

Analogy

Imagine DMSO as a highly skilled, miniature delivery truck driver named Dex. Dex has a unique ability to navigate through even the tiniest, most congested streets in the body's cellular city. Not only can Dex drive through areas where other trucks can't go, but he also has a special key that unlocks nearly every door he encounters.

When Dex (DMSO) is sent out on a job, he can carry a variety of packages (other medications or healing compounds) to their exact destinations, weaving through traffic (skin layers, cell membranes) with ease. As he travels, Dex also acts like a street cleaner, sweeping up harmful debris (free radicals) and reducing roadblocks (inflammation) along the way.

What makes Dex truly exceptional is his ability to repair potholes (wounds) and clear traffic jams (reduce swelling) as he goes about his deliveries. He can even upgrade the city's infrastructure by reinforcing weak bridges (strengthening connective tissues) and improving the efficiency of power plants (enhancing cellular metabolism).

The value of Dex's work is immense - he can reach areas of the city that other delivery services simply can't access, making him invaluable for special deliveries to high-security zones like the brain district (crossing the blood-brain barrier). His versatility in handling various types of cargo and ability to multitask while on his routes make him a cost-effective and efficient solution for many of the city's delivery and maintenance needs.

This is similar to how DMSO works in the body - penetrating tissues, carrying other substances, reducing inflammation, promoting healing, and potentially treating a wide range of conditions, all while being relatively safe and efficient.

DMSO Nature’s Healer (1993)

By Dr Morton Walker

Dmso: Nature's Healer book by Morton Walker (thriftbooks.com)

35 Questions & Answers

Question 1: What is DMSO and how was it discovered?

DMSO, or dimethyl sulfoxide, is a colorless liquid solvent derived from wood pulp. It was first synthesized in 1866 by Russian scientist Alexander Saytzeff in Kazan. Initially, DMSO was valued for its ability to dissolve almost any chemical dropped into it, making it useful as a degreaser, paint thinner, and antifreeze. However, its medicinal properties remained undiscovered for nearly a century. In 1962, Dr. Stanley Jacob at the University of Oregon Medical School began investigating DMSO's potential to safely freeze human kidneys, leading to the discovery of its remarkable therapeutic properties.

Question 2: What are the primary therapeutic properties of DMSO?

DMSO has a wide range of therapeutic properties, making it a versatile medical tool. It acts as a powerful anti-inflammatory agent, pain reliever, and penetration enhancer. DMSO can transport other drugs across membranes, reduce swelling, slow bacterial growth, and enhance the body's immune response. It also has antioxidant properties, scavenging harmful free radicals. Additionally, DMSO demonstrates antiviral and antifungal effects, promotes healing of wounds and burns, and may have neuroprotective properties in cases of brain and spinal cord injuries.

Question 3: How does DMSO penetrate the skin and cell membranes?

DMSO has a unique ability to rapidly penetrate the skin and cell membranes without causing damage. This property is due to its small molecular size and its capacity to associate with water, proteins, carbohydrates, nucleic acids, and other cellular constituents. DMSO can replace some water molecules in cellular structures, altering membrane permeability. When applied to the skin, it can be tasted on the tongue within 30 seconds, demonstrating its swift absorption and distribution throughout the body. This penetrating power allows DMSO to carry other substances with it, enhancing drug delivery to targeted areas.

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10 takeaways from the book:

1. DMSO was first synthesized in 1866 but its medicinal properties weren't discovered until 1962 by Dr. Stanley Jacob.
2. DMSO is approved by the FDA only for treating interstitial cystitis, despite showing potential for numerous other conditions.
3. In topical applications, DMSO concentrations typically range from 50% to 90%, with lower concentrations used on sensitive areas.
4. Intravenous DMSO dosage is usually around 1 gram per kilogram of body weight.
5. DMSO can penetrate the skin and enter the bloodstream within 30 seconds of topical application.
6. In a study of 30 patients with various cancers treated with DMSO, 70.5% showed condition improvement when combined with other anti-cancer agents.
7. DMSO has been used to treat over 300 patients for arthritis-related issues in Ohio alone, where the annual cost of arthritic diseases is approximately $450 million.

8. Approximately 41.6 million Americans suffer from arthritic symptoms severe enough to require medical attention, with 1 in 2 people over 65 affected.
9. In a study of 46 patients with herpes zoster or postherpetic neuralgia, 28 patients (60.9%) had good results with DMSO treatment.
10. DMSO has an LD50 (lethal dose for 50% of subjects) of 14,500 mg/kg body weight in rats when administered orally, indicating a relatively low toxicity profile compared to many other medications.

Question 4: What is the controversy surrounding DMSO's FDA approval?

The controversy surrounding DMSO's FDA approval stems from a complex history of research, regulatory decisions, and public interest. In 1965, the FDA halted clinical trials of DMSO due to concerns about potential eye toxicity in animals. This decision was made despite the lack of evidence for similar effects in humans. Over the years, numerous studies have demonstrated DMSO's safety and efficacy for various conditions, but the FDA has remained cautious. Currently, DMSO is only approved for treating interstitial cystitis, a bladder condition. The controversy continues as many patients and doctors advocate for broader approval, citing DMSO's potential benefits for a wide range of medical conditions.

Question 5: How has DMSO been used to treat arthritis?

DMSO has been used to treat various forms of arthritis, including rheumatoid arthritis and osteoarthritis. When applied topically or administered intravenously, DMSO can reduce pain, inflammation, and swelling in affected joints. It works by blocking pain signals, reducing inflammation, and potentially slowing the progression of joint damage. Many arthritis patients report significant relief and improved mobility after DMSO treatment.

Question 6: What role does DMSO play in treating sports injuries?

DMSO has gained popularity in sports medicine for its ability to rapidly treat acute injuries. When applied to sprains, strains, and contusions, it can significantly reduce pain, swelling, and inflammation. Athletes report faster recovery times and quicker return to action after DMSO treatment. For example, it has been used to treat conditions like tennis elbow, hamstring pulls, and ankle sprains. DMSO's penetrating

properties allow it to reach deep tissues quickly, promoting healing and reducing recovery time. Some professional sports teams have incorporated DMSO into their injury treatment protocols, although its use remains controversial due to regulatory issues.

DMSO - AMD

1. DMSO (dimethyl sulfoxide) is a remarkably safe chemical that protects cells from fatal stressors like freezing, burning, shockwaves, and ischemia.

2. DMSO can produce miraculous results for heart, brain, and spinal cord injuries due to these organs' vulnerability.

3. The FDA's sabotage of DMSO's adoption has potentially cost millions of lives and prevented many from avoiding lifelong disability or paralysis.

4. DMSO stabilizes proteins, making it effective for treating protein disorders like amyloidosis and various genetic disorders.

5. DMSO treats many conditions considered incurable, including circulatory disorders and complex neurological disorders.

6. DMSO is one of the safest medically active substances, with no deaths ever linked to its use despite millions of treatments.

7. The most common side effect (50-75% of users) is reversible skin irritation when applied topically at high concentrations.

8. DMSO is effective at removing excess fluid from outside the bloodstream, increasing circulation, and eliminating circulatory obstructions.

9. Studies show DMSO's effectiveness in treating Raynaud's syndrome, thrombophlebitis, diabetic circulatory impairments, and varicose veins.

10. DMSO prevents blood clot formation and is a powerful platelet deaggregator, making it potentially useful for treating heart attacks.

11. Current stroke management using tPA (tissue plasminogen activator) has limitations, with only 13% of patients significantly benefiting and risks of bleeding.

Question 7: How has DMSO been used in treating head and spinal cord injuries?

DMSO has shown promise in treating head and spinal cord injuries, particularly when administered quickly after the injury occurs. In animal

studies, DMSO has demonstrated the ability to reduce brain swelling, decrease intracranial pressure, and potentially limit the extent of damage following traumatic brain injury. For spinal cord injuries, DMSO may help prevent paralysis when given within 90 minutes of the injury. It works by improving blood flow to the injured area, reducing inflammation, and potentially protecting nerve cells from further damage. While research is ongoing, some clinicians advocate for DMSO's use in emergency situations involving severe head or spinal trauma.

Question 8: What is the potential of DMSO in cancer treatment?

DMSO shows potential in cancer treatment through various mechanisms. It has been found to induce differentiation in some cancer cells, potentially converting them to a more normal state. DMSO can also enhance the effectiveness of certain chemotherapy drugs by improving their penetration into tumor cells. Some studies have shown that DMSO may have direct anti-tumor effects, particularly in certain types of leukemia and lymphoma. Additionally, DMSO's ability to scavenge free radicals and reduce inflammation may contribute to its potential anti-cancer properties.

Question 9: How does DMSO affect mental disabilities such as Down's syndrome?

DMSO has been investigated for its potential to improve cognitive function in individuals with mental disabilities, including Down's syndrome. Some studies have reported improvements in speech, motor skills, and overall cognitive function in children with Down's syndrome treated with DMSO. The mechanism is not fully understood, but it may involve DMSO's ability to cross the blood-brain barrier and its potential neuroprotective effects.

DMSO - AMD

12. DMSO could revolutionize stroke therapy by effectively treating both ischemic and hemorrhagic strokes, protecting brain tissue, and preventing reperfusion injuries.

13. A 2002 clinical trial showed 63% of acute ischemic stroke patients treated with DMSO achieved improved or markedly improved neurological status.

14. DMSO has shown effectiveness in treating traumatic brain injuries and reducing intracranial pressure (ICP) in several human and animal studies.

15. DMSO has demonstrated remarkable results in treating spinal cord injuries, with some patients regaining function even years after injury.

16. DMSO acts as a chemical chaperone, helping proteins fold correctly and potentially treating various genetic disorders.

17. Studies have shown DMSO's effectiveness in treating amyloidosis, dissolving amyloid aggregates and eliminating them from the body.

18. DMSO has shown promise in treating cognitive impairment and dementia, with studies reporting improvements in memory, concentration, and communication.

19. A study of 42 psychiatric patients showed significant improvements in various conditions, including schizophrenia and manic-depressive psychosis, after DMSO treatment.

20. DMSO has shown remarkable effects on developmental disabilities, including Down Syndrome, with some children showing significant improvements in cognitive function.

21. In a study of 67 mentally disabled children with Down Syndrome, those receiving high-dose DMSO showed an average IQ increase of 11.2 points.

22. DMSO can be administered topically, orally, intramuscularly, or intravenously, with various protocols for different conditions.

Question 10: What are the known side effects of DMSO?

The most common side effect of DMSO is a garlic-like taste and odor on the breath and skin, which occurs shortly after administration. Some patients experience skin irritation, redness, or itching at the site of application. In rare cases, DMSO may cause nausea, headaches, or dizziness. There have been concerns about potential eye toxicity based on animal studies, but this effect has not been observed in humans. DMSO can interact with other medications, potentially altering their effects. Despite these potential side effects, DMSO is generally considered to have a low toxicity profile compared to many other medications.

Question 11: How is DMSO administered for various conditions?

DMSO can be administered through several routes depending on the condition being treated. For topical applications, it's often used in concentrations ranging from 50% to 90% and applied directly to the skin. Intravenous administration is used for more severe conditions, with dosages carefully calculated based on body weight. Oral

administration is also possible, typically mixed with juice to mask the taste. For certain conditions like interstitial cystitis, DMSO is instilled directly into the bladder. The concentration, frequency, and duration of treatment vary widely depending on the specific condition and individual patient factors.

Question 12: What is the mechanism of action for DMSO in pain relief?

DMSO provides pain relief through multiple mechanisms. It blocks conduction in small nerve fibers responsible for pain transmission, effectively interrupting pain signals. DMSO also has anti-inflammatory properties, reducing swelling and pressure on nerve endings. Its ability to penetrate tissues allows it to reach deep-seated pain sources quickly. Additionally, DMSO acts as a vasodilator, improving blood flow to affected areas, which can help reduce pain and promote healing. The compound also has antioxidant properties, neutralizing free radicals that can contribute to pain and inflammation in various conditions.

DMSO - AMD

23. For stroke treatment, DMSO is often applied topically to the artery feeding the affected area, such as the carotid artery.

24. IV DMSO dosing typically ranges from 1-2 g/kg, with 1-1.5 g/kg being the most common dose.

25. DMSO is compatible with certain IV materials, including polyethylene, polypropylene, and Teflon, but may interact with some plastics.

26. Oral DMSO dosing often starts at 3.5g in water, gradually increasing to find the appropriate dose.

27. DMSO's wholesale price has increased significantly, now costing between $8-40 per gram.

28. Despite its potential, DMSO remains largely unutilized in mainstream medicine due to FDA restrictions and lack of awareness.

29. Finding healthcare providers who offer IV DMSO treatment can be challenging, often requiring word-of-mouth referrals or contacting integrative medicine practitioners.

30. DMSO has unique properties as a near-universal solvent, able to pass through biological membranes without damaging them, and can rapidly enter the body (including the brain) regardless of its route of administration.

31. Animal studies have shown DMSO's effectiveness in protecting against radiation damage, with one study showing it prevented 80% of DNA damage caused by gamma radiation.

32. DMSO has demonstrated anti-aging effects on the brain, with anecdotes of DMSO-consuming centenarians showing no cognitive impairment despite their age.

33. AMD mentions that DMSO can be combined with other substances for enhanced effects, such as fructose diphosphate (FDP) or hydrogen peroxide, which have shown promising results in some studies for treating strokes and other conditions.

Question 13: How has DMSO been used to treat scleroderma?

DMSO has been investigated as a potential treatment for scleroderma, a condition characterized by hardening and tightening of the skin and connective tissues. When applied topically, DMSO may help soften the skin and improve flexibility in affected areas. It's thought to work by altering collagen formation and reducing inflammation. Some patients report improved mobility and reduced pain after DMSO treatment.

Question 14: What is the role of DMSO in treating interstitial cystitis?

Interstitial cystitis is currently the only FDA-approved indication for DMSO use in the United States. When instilled directly into the bladder, DMSO can provide relief from the pain and frequent urination associated with this condition. It's believed to work by reducing inflammation in the bladder lining and potentially disrupting pain signals. DMSO may also have a protective effect on the bladder tissue. Treatment typically involves multiple instillations over several weeks or months. Many patients with interstitial cystitis report significant improvement in symptoms and quality of life following DMSO treatment.

Question 15: How does DMSO interact with other medications?

DMSO has the unique ability to enhance the absorption and effectiveness of other drugs. When combined with medications, it can increase their penetration into tissues, potentially enhancing their therapeutic effects. This property has been explored for improving the delivery of antibiotics, anti-inflammatory drugs, and even some chemotherapy agents. However, this interaction can also potentially increase the side effects of certain medications. Additionally, DMSO may alter the metabolism of some drugs in the body.

List of conditions that DMSO may help with:

- Stroke (both ischemic and hemorrhagic)
- Traumatic brain injuries
- Spinal cord injuries
- Heart attacks
- Raynaud's syndrome
- Thrombophlebitis
- Diabetic circulatory impairments (e.g., peripheral neuropathy, diabetic ulcers)
- Varicose veins
- Amyloidosis
- Alzheimer's disease
- Parkinson's disease
- ALS (Amyotrophic Lateral Sclerosis)
- Multiple sclerosis
- Down syndrome
- Developmental disabilities
- Cognitive impairment and dementia
- Psychiatric conditions (e.g., schizophrenia, manic-depressive psychosis)
- Concussions
- Arthritis
- Acute musculoskeletal injuries
- Chronic musculoskeletal disorders
- Pain conditions
- Frostbite
- Burns (including acid burns)
- Nephrogenic diabetes insipidus
- Cystic fibrosis
- Machado-Joseph disease
- Creutzfeldt-Jakob disease

- Niemann-Pick disease
- Protein misfolding diseases
- Atherosclerosis
- High blood pressure
- Cancer (as a complementary treatment)
- Learning disabilities
- ADHD
- Anxiety disorders
- Epilepsy
- Dyslexia
- Dyscalculia

Question 16: What is the current legal status of DMSO in different countries?

The legal status of DMSO varies significantly across countries. In the United States, it's only FDA-approved for treating interstitial cystitis, though some states have passed laws allowing its use for other conditions. In Canada, DMSO is approved for treating scleroderma. Several European countries, including Germany and Austria, allow DMSO use for a broader range of conditions. In Russia, DMSO has been used more extensively in medical practice. The regulatory landscape is complex and evolving, with ongoing debates about DMSO's safety and efficacy influencing its legal status in various jurisdictions.

Question 17: How has DMSO been used to treat respiratory infections?

DMSO has shown potential in treating respiratory infections, particularly in children. Some studies have reported its effectiveness in reducing symptoms of bronchiolitis and other respiratory tract inflammations. When used as a spray or inhalant, DMSO may help reduce inflammation in the airways, thin mucus secretions, and potentially combat bacterial or viral pathogens. Its ability to penetrate tissues allows it to reach infected areas quickly.

Question 18: What is the effect of DMSO on herpes zoster and simplex?

DMSO has demonstrated potential in treating both herpes zoster (shingles) and herpes simplex infections. When applied topically, often in combination with antiviral drugs, DMSO can help reduce pain,

inflammation, and healing time associated with herpes outbreaks. Its ability to penetrate the skin allows it to deliver antiviral medications more effectively to the site of infection. Some studies have reported significant reduction in pain and faster healing of lesions with DMSO treatment.

Question 19: How does DMSO affect the blood-brain barrier?

DMSO has the remarkable ability to cross the blood-brain barrier, a protective boundary that prevents many substances from entering the brain. This property makes DMSO potentially valuable for delivering medications to the central nervous system. It can carry drugs that normally wouldn't penetrate this barrier, potentially improving treatments for various neurological conditions. Additionally, DMSO itself may have neuroprotective effects when it reaches the brain. This ability to cross the blood-brain barrier is particularly significant in the context of treating brain injuries, strokes, and certain neurodegenerative diseases.

Question 20: What is the role of DMSO in treating eye conditions?

The use of DMSO in treating eye conditions is a subject of ongoing research and some controversy. While early animal studies raised concerns about potential eye toxicity, subsequent human studies have not shown significant adverse effects. Some researchers have explored DMSO's potential in treating conditions like cataracts and macular degeneration. Its ability to penetrate tissues and carry other medications could make it useful in ocular drug delivery.

Question 21: How has DMSO been used in veterinary medicine?

In veterinary medicine, DMSO has found applications in treating various conditions in animals. It's commonly used for managing inflammation and pain in horses and dogs, particularly for musculoskeletal injuries. Veterinarians have applied DMSO topically to treat sprains, strains, and bursitis in large animals. It's also been used to reduce swelling and promote healing in cases of trauma. Some veterinarians have explored its potential in treating intervertebral disk disease in dogs. The ease of topical application and its penetrating properties make DMSO an attractive option in veterinary practice, though its use is still subject to regulatory considerations.

Question 22: What is the recommended dosage and concentration of DMSO for different applications?

The dosage and concentration of DMSO vary widely depending on the condition being treated and the method of application. For topical use, concentrations typically range from 50% to 90%, with lower concentrations used on sensitive areas like the face. Intravenous dosages are usually calculated based on body weight, often around 1 gram per kilogram. For interstitial cystitis, a 50% solution is typically instilled into the bladder. Oral dosages may range from 1 to 3 teaspoons daily, often diluted in juice. It's crucial to note that these dosages should be determined by a healthcare professional, as improper use can lead to side effects or reduced efficacy.

Question 23: How does DMSO affect inflammation and swelling?

DMSO is a potent anti-inflammatory agent that works through multiple mechanisms. It inhibits the production of inflammatory mediators and reduces the activity of inflammatory cells. DMSO also acts as a powerful antioxidant, neutralizing free radicals that contribute to inflammation. Its ability to penetrate tissues allows it to reach inflamed areas quickly, providing rapid relief. Additionally, DMSO improves blood flow to affected areas, which can help reduce swelling and promote healing. These combined effects make DMSO effective in reducing inflammation and swelling associated with various conditions, from arthritis to acute injuries.

Question 24: What is the role of DMSO in wound healing and burn treatment?

DMSO has shown promise in accelerating wound healing and treating burns. When applied to wounds or burns, it can reduce pain and inflammation while promoting tissue repair. DMSO's ability to penetrate the skin allows it to reach deeper layers of damaged tissue. It may also enhance the delivery of other healing agents when used in combination. In burn treatment, DMSO has been reported to reduce tissue damage and prevent the formation of blisters. Some studies suggest it may help prevent scarring by altering collagen formation during the healing process.

Question 25: How does DMSO interact with the immune system?

DMSO has been observed to have immunomodulatory effects, meaning it can influence the activity of the immune system. It may enhance the production of certain immune cells and increase the activity of macrophages, which are important in fighting infections and removing

cellular debris. DMSO also appears to stimulate the production of interferon, a key component of the body's antiviral defenses. Additionally, its anti-inflammatory properties can help regulate overactive immune responses. These effects on the immune system contribute to DMSO's potential in treating various conditions, from infections to autoimmune disorders, though more research is needed to fully understand these interactions.

Question 26: What is the potential of DMSO in treating neurological disorders?

DMSO shows promise in treating various neurological disorders due to its ability to cross the blood-brain barrier and its neuroprotective properties. In stroke treatment, DMSO may help reduce brain swelling and limit damage when administered quickly. For neurodegenerative diseases like Alzheimer's and Parkinson's, DMSO's antioxidant properties could potentially slow disease progression. Some studies have explored its use in treating multiple sclerosis and amyotrophic lateral sclerosis (ALS). DMSO's ability to carry other drugs into the brain also makes it a potential enhancer for existing neurological treatments.

Question 27: How has DMSO been used to treat skin conditions?

DMSO has been used to treat various skin conditions due to its penetrating and anti-inflammatory properties. It's been applied topically to treat psoriasis, eczema, and other inflammatory skin disorders. DMSO may help reduce itching, redness, and scaling associated with these conditions. In scleroderma, it's been used to soften hardened skin. For fungal infections like athlete's foot, DMSO's antifungal properties and ability to carry other antifungal agents deeper into the skin make it potentially effective. It's also been used to treat keloids and other types of scarring.

Question 28: What is the effect of DMSO on free radicals in the body?

DMSO acts as a powerful antioxidant in the body, effectively scavenging harmful free radicals. Free radicals are unstable molecules that can damage cells, contributing to inflammation, aging, and various diseases. DMSO's ability to neutralize these molecules, particularly hydroxyl radicals, is one of its key therapeutic properties. This antioxidant effect may contribute to DMSO's anti-inflammatory and potentially anti-aging properties. By reducing oxidative stress in tissues, DMSO may help protect against cellular damage and support overall health. This free radical scavenging ability is particularly relevant in conditions like

arthritis and neurodegenerative diseases where oxidative stress plays a significant role.

Question 29: How does DMSO affect drug delivery in the body?

DMSO has a unique ability to enhance drug delivery in the body, making it a valuable tool in pharmacology. When combined with other medications, DMSO can increase their absorption through the skin and mucous membranes. It can carry both water-soluble and fat-soluble drugs across cell membranes, potentially increasing their effectiveness. This property has been explored for improving the delivery of antibiotics, anti-inflammatory drugs, and even chemotherapy agents. DMSO can also help drugs cross the blood-brain barrier, opening up new possibilities for treating neurological conditions. However, this enhanced delivery effect must be carefully managed, as it can also potentially increase drug side effects.

Question 30: What is the role of DMSO in cryopreservation?

DMSO plays a crucial role in cryopreservation, the process of preserving biological materials at very low temperatures. It acts as a cryoprotectant, preventing the formation of ice crystals that can damage cells during freezing. DMSO's ability to penetrate cell membranes allows it to replace some of the water inside cells, reducing the risk of cellular damage. This property makes DMSO valuable in preserving various types of cells, tissues, and even organs for research or medical use. It's commonly used in the cryopreservation of stem cells, embryos, and sperm. The use of DMSO in cryopreservation has significant implications for fields like regenerative medicine and reproductive technology.

Question 31: How has DMSO been used to treat urinary tract conditions?

DMSO has been used to treat various urinary tract conditions, with its most notable application being in interstitial cystitis. When instilled directly into the bladder, DMSO can reduce inflammation, pain, and frequency of urination associated with this condition. It's believed to work by reducing inflammation in the bladder lining and potentially disrupting pain signals. DMSO has also been explored for treating other urinary tract issues such as chronic prostatitis and bladder pain syndrome. Its ability to penetrate tissues and carry other medications makes it potentially useful in delivering drugs to the urinary tract.

Question 32: What is the potential of DMSO in treating cardiovascular conditions?

DMSO shows potential in treating various cardiovascular conditions. Its ability to reduce inflammation and act as an antioxidant may help

protect the heart and blood vessels from damage. Some studies have suggested that DMSO could help reduce the size of heart attacks when administered quickly after the onset of symptoms. It may also have a role in preventing blood clots due to its ability to reduce platelet aggregation. Additionally, DMSO's vasodilatory effects could potentially be beneficial in conditions like angina.

Question 33: How does DMSO affect cellular metabolism?

DMSO can influence cellular metabolism in several ways. It can alter the structure and function of cell membranes, potentially affecting the transport of substances in and out of cells. DMSO has been shown to influence enzyme activity and protein synthesis within cells. Its antioxidant properties can protect cellular components from oxidative damage, potentially influencing metabolic processes. Some studies suggest that DMSO can affect mitochondrial function, which is crucial for cellular energy production. These effects on cellular metabolism contribute to DMSO's wide range of potential therapeutic applications, but they also underscore the need for careful research to fully understand its impacts on cellular function.

Question 34: What is the role of DMSO in treating infectious diseases?

DMSO has shown potential in treating various infectious diseases due to its antimicrobial properties and ability to enhance the delivery of other medications. It has demonstrated antibacterial, antifungal, and antiviral effects in some studies. DMSO can potentially increase the effectiveness of antibiotics by helping them penetrate bacterial cell walls. In viral infections like herpes, DMSO has been used topically, often in combination with antiviral drugs, to enhance their effectiveness. Its anti-inflammatory properties may also help alleviate symptoms associated with infections.

Question 35: How has DMSO been used in dental applications?

In dentistry, DMSO has been explored for various applications due to its penetrating and anti-inflammatory properties. It has been used to treat dental pain and inflammation, particularly in cases of temporomandibular joint (TMJ) disorders. Some dentists have used DMSO to help deliver other medications deeper into dental tissues, potentially enhancing their effectiveness. It's been investigated for treating periodontal disease by reducing inflammation in the gums. DMSO's potential to reduce pain and promote healing has also led to its exploration in post-extraction care.

Healing with DMSO

By Amandha Dawn Vollmer – 44 Questions & Answers – Unbekoming Book Summary

If I were stranded on a desert island or knew the world was ending and I could only bring a few therapies with me, one of them, without a doubt, would be DMSO. – A Midwestern Doctor

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This is the second book I am summarizing on the subject following:

DMSO Nature's Healer - Lies are Unbekoming

With thanks to Amandha Dawn Vollmer.

Analogy

Imagine a master key that not only opens every door in a vast building but also serves as a skilled guide, helping other keys reach their designated locks more efficiently. This master key can also repair damaged locks, strengthen weak doors, and even prevent break-ins. However, despite its remarkable capabilities, the building's management committee (representing regulatory bodies) has restricted its use to only a few specific doors, while maintenance workers (representing medical practitioners) who have witnessed its effectiveness continue to advocate for its broader application.

The master key represents DMSO - a versatile substance that can penetrate biological barriers (doors), carry other substances with it (helping other keys), reduce inflammation and promote healing (repairing locks), and protect against cellular damage (preventing break-ins). Just as the master key's potential remains partially untapped due to administrative restrictions, DMSO's full therapeutic potential remains limited by regulatory constraints and economic factors, despite its demonstrated safety and effectiveness.

Furthermore, like a master key that must be handled carefully to maintain security, DMSO requires proper understanding and respect for its power. When used correctly, it can provide access to healing pathways that might otherwise remain closed, while improper use could potentially allow unwanted substances to enter. This balance between powerful capability and responsible use encapsulates the core message about DMSO's role in therapeutic applications.

12-point summary

1. DMSO (dimethyl sulfoxide) represents a groundbreaking natural compound derived from tree lignin, demonstrating remarkable versatility in medical applications. Its unique molecular structure, featuring a sulfur unit double-bonded to oxygen and flanked by methyl groups, enables it to penetrate biological membranes easily while carrying other substances with it. This natural compound appears in many foods and is part of Earth's natural sulfur cycle, indicating its fundamental role in biological systems.

2. The historical development of DMSO reveals both its potential and the challenges of bringing natural compounds into mainstream medicine. Discovered in 1866 but not commercially developed until the 1950s, DMSO's journey illustrates how promising natural treatments can be hindered by regulatory hurdles and pharmaceutical industry economics. The FDA's 1965 ban, despite extensive safety data, demonstrates how regulatory decisions can significantly impact medical advancement.

3. DMSO's ability to cross the blood-brain barrier represents one of its most significant therapeutic properties. This characteristic, combined with its capacity to carry other substances across this normally impenetrable barrier, suggests enormous potential for treating neurological conditions. Studies have shown that DMSO can reduce brain swelling within minutes of administration, making it particularly valuable for treating head injuries and other neurological emergencies.

4. The substance's dual nature as both water-loving and fat-loving (amphiphilic) makes it uniquely effective as a therapeutic agent. This property allows DMSO to interact with both water-soluble and fat-soluble substances, enabling it to penetrate deeply into tissues while carrying other therapeutic compounds. This characteristic explains its effectiveness in various applications, from topical pain relief to systemic treatments.

5. As an anti-inflammatory agent, DMSO works through multiple mechanisms that set it apart from conventional treatments. It affects prostaglandin pathways, improves blood flow through vasodilation, and modifies platelet behavior, all while avoiding the gastrointestinal side effects common to traditional anti-inflammatory drugs. This comprehensive approach to inflammation makes it particularly valuable for treating chronic inflammatory conditions.

6. DMSO's safety profile, when properly used, stands out among therapeutic substances. While requiring careful attention to concentration and application methods, pharmaceutical-grade DMSO (99.995% pure) has demonstrated remarkable safety in thousands of

studies. The key to safe use lies in proper dilution, clean application conditions, and understanding its interactions with other substances.

7. The compound's role in cryopreservation has revolutionized organ transplantation and stem cell storage. Its ability to prevent ice crystal formation during freezing while maintaining cellular viability has made it invaluable in medical procedures requiring tissue preservation. This application alone has saved countless lives by making organ transplantation more viable.

8. DMSO's wound healing properties demonstrate its broad therapeutic potential. By reducing reactive oxygen species, improving blood flow to damaged areas, and exhibiting bacteriostatic properties, it creates optimal conditions for healing while preventing infection. Its effectiveness in treating burns, particularly when combined with aloe vera, showcases its versatility in acute injury treatment.

9. The substance's interaction with DNA and radiation protection reveals its potential in preventive medicine. DMSO's ability to protect against radiation damage and support DNA repair mechanisms suggests applications ranging from cancer treatment support to radiation exposure protection. This protective capacity extends to both preventing initial damage and supporting repair processes.

10. Veterinary applications of DMSO provide strong evidence of its therapeutic value. Its FDA approval for treating acute swelling in horses and its widespread use in veterinary medicine demonstrate its effectiveness across species. The successful use in animals, where placebo effects are unlikely, reinforces the substance's genuine therapeutic properties.

11. DMSO's role in mental health treatment represents an emerging area of interest. Its ability to reduce brain inflammation, combined with documented success in treating various mental health conditions, suggests potential applications in psychiatric medicine. This connection between inflammation and mental health opens new avenues for treatment approaches.

12. The economic and regulatory challenges surrounding DMSO highlight broader issues in medical innovation. As a natural compound that cannot be exclusively patented, DMSO exemplifies how promising treatments may be underutilized when financial incentives for development are limited. This situation raises important questions about how medical innovation is funded and regulated.

Healing with DMSO

The Complete Guide to Safe and Natural Treatments for Managing Pain, Inflammation, and Other Chronic Ailments with Dimethyl Sulfoxide

44 Questions & Answers

Question 1: What is DMSO and how is it naturally produced?

Answer: Dimethyl sulfoxide (DMSO) comes from tree lignin, an important component in plant cell walls, and emerges as a by-product of the kraft method in pulp and paper production. This naturally occurring compound also forms part of the earth's sulfur cycle, where marine phytoplankton produces DMS (dimethyl sulfide) that oxidizes into DMSO in the atmosphere, contributing to cloud formation.

DMSO exists naturally in many common foods and beverages, including tea, coffee, wine, asparagus, clams, tomatoes, milk, and cooked corn. It's also found in spearmint oil, nonfat dried milk, barley malt, and natural waters, demonstrating its widespread presence in nature.

Question 2: How does DMSO's molecular structure enable its unique properties?

Answer: DMSO's molecular structure features a sulfur unit double bonded to an oxygen unit, flanked by carbon and hydrogen methyl groups (CH_3), creating a perfectly symmetrical molecule slightly larger than water. This unique arrangement gives DMSO its remarkable versatility as a solvent and its ability to penetrate biological membranes.

The molecule's symmetry and size allow it to be easily transported throughout the body via blood circulation, while its structure enables it to dissolve both organic and inorganic substances. This dual capability makes DMSO an exceptional carrier for other substances and explains its effectiveness in various medical applications.

Question 3: What makes DMSO both water-loving and fat-loving?

Answer: DMSO possesses unique polarity characteristics that give it two distinct faces - one capable of attaching to water-soluble molecules and another that can bond with oil-soluble molecules. This amphiphilic nature makes DMSO an exceptional surfactant, similar to substances used in cleaning products.

When in water, DMSO can alter the spaces between its own molecules through a process called conformation. This molecular flexibility allows DMSO to interact with proteins and move through them effectively, explaining its remarkable ability to penetrate skin surfaces and its effectiveness as a pain reliever by affecting nerve membranes and reducing their sensitivity.

Question 4: What are the freezing and melting points of DMSO, and why are they significant?

Answer: DMSO has a notably high freezing point of 65.4°F and a melting point of 65.12°F. These temperatures are particularly significant because they mean DMSO can readily freeze even in the warmth of a house during winter months, though this freezing doesn't damage the substance's effectiveness.

Unlike water, which expands significantly when freezing, DMSO expands at a rate 230 times lower than water when transitioning from liquid to solid state. This property makes DMSO particularly valuable for cryopreservation applications and explains why it can be safely stored in glass containers without risk of breakage during freezing.

Question 5: How does DMSO's ability to cross the blood-brain barrier work?

Answer: DMSO demonstrates remarkable ability to cross the blood-brain barrier through its unique molecular properties and interaction with cellular membranes. A 1982 study showed that when combined with an enzymatic tracer, DMSO enabled the tracer to reach brain tissue, proving its capacity to facilitate transport across this typically impermeable barrier.

This capability has profound implications for treating various neurological conditions, including head injury, brain cancer, cerebral stroke, and other brain diseases. DMSO's ability to carry other substances across the blood-brain barrier suggests potential applications in delivering therapeutic agents directly to brain tissue, though this potential remains largely unexplored in conventional medicine.

Question 6: What distinguishes pharmaceutical-grade from industrial-grade DMSO?

Answer: Pharmaceutical-grade DMSO achieves 99.995 percent purity through a specialized filtration process using activated charcoal to remove impurities. This grade is the only version approved for use in humans and animals, ensuring maximum safety and effectiveness for therapeutic applications.

Industrial-grade DMSO, while useful for various applications including paint-stripping formulations and polymer formation, must carry explicit warnings against human use. The distinction between grades is crucial for safety, as industrial-grade DMSO may contain impurities that could be harmful when used medicinally.

Question 7: Who discovered DMSO and when?

Answer: Russian doctor Alexander M. Saytzeff discovered DMSO in 1866, though no commercial applications were identified for nearly nine decades. The substance remained largely unexplored until British scientists in the 1950s recognized its potential as a cryoprotective agent for preserving bone marrow and blood cells.

Dr. Stanley Jacob at the Oregon Health and Science University Medical School later made breakthrough discoveries about DMSO's ability to penetrate skin and organ membranes without causing damage. This finding, along with Robert Herschler's research at Crown Zellerbach, launched the modern era of DMSO research and applications.

Question 8: What led to the FDA's ban of DMSO in 1965?

Answer: The FDA's ban of DMSO stemmed from premature media coverage in Oregon newspapers that sensationalized DMSO's properties before proper scientific validation could occur. This prevented DMSO from following the traditional path of introduction through scientific journals with supporting studies and evidence, instead creating an image of an overhyped cure-all.

Despite testing on over 100,000 patients showing zero toxicity at proper dosages, the FDA began harassing researchers, including raiding Dr. Jacob's laboratory and office without warrants. The ban was primarily triggered by one negative study showing lens clouding in laboratory animals given extremely high doses of DMSO via injection, though these effects were reversible when treatment stopped.

Question 9: Why did DMSO face challenges in gaining widespread medical acceptance?

Answer: DMSO's challenges in gaining medical acceptance stemmed from multiple factors, including its emergence during a period of heightened caution following the thalidomide disaster. The political climate was extremely risk-averse, leading to overcautious regulation that hindered DMSO's development despite its demonstrated safety profile.

Another significant factor was economic: no single drug company could obtain an exclusive patent since DMSO is a natural compound. This lack of potential financial return led pharmaceutical companies to avoid investing in DMSO research and development, as confirmed by Stanley Jacob's account of a pharmaceutical executive stating that despite DMSO being "the major drug of our century," it wasn't worth pursuing from a business perspective.

Question 10: What are the current FDA-approved uses for DMSO?

Answer: FDA-approved uses for DMSO include its application in interstitial cystitis treatment through products like RIMSO-50, a 50% sterile solution used for bladder symptoms. The substance is also approved as a cryoprotectant for preserving organs and stem cells, particularly in transplantation procedures and cord blood preservation.

In veterinary medicine, DMSO has gained FDA approval for treating acute swelling in horses and ear infections in dogs. It's also incorporated into various medical devices and drug delivery systems, including Onyx for treating intracranial aneurysms and Tegress for urethral conditions.

Question 11: How is DMSO regulated differently across various countries?

Answer: In Canada and the European Union, DMSO-containing topical products are approved for treating specific types of joint pain. Germany allows DMSO products like Dolicur to be sold over-the-counter for sports-related injuries, while various Russian provinces permit DMSO self-medication.

China has embraced DMSO as a widely used topical remedy for self-medicated pain relief, taking a more open approach than North American regulators. European countries also utilize DMSO with idoxuridine for treating shingles, demonstrating a broader acceptance of its therapeutic applications.

Question 12: How does DMSO function as a pain reliever?

Answer: DMSO operates as a true analgesic by blocking nerve fibers that transmit pain signals to the brain. Unlike conventional pain medications, it specifically targets nonmyelating fibers - smaller nerve fibers without protective sheaths - making it particularly effective for certain types of pain without causing drowsiness or other common side effects.

The substance provides approximately six hours of pain relief and doesn't create tolerance, meaning users don't need to increase dosage over time. In fact, many users report needing less DMSO over time to achieve the same pain-relieving effects, making it particularly valuable for chronic pain management.

Question 13: What makes DMSO effective for treating inflammation?

Answer: DMSO's anti-inflammatory properties work through multiple mechanisms, including its effect on prostaglandin pathways and its ability to widen arteries while preventing constriction. It increases the production of cAMP, a molecule important in platelet formation, while simultaneously preventing harmful clumping of platelets.

The substance also reduces the production of thromboxane, which typically causes blood vessels to constrict. This combination of effects

leads to improved blood flow, enhanced nutrient delivery, better waste removal, and improved cell-to-cell communication, all contributing to its powerful anti-inflammatory capabilities.

Question 14: How does DMSO assist in wound healing?

Answer: DMSO accelerates wound healing by reducing reactive oxygen species (ROS) that can lead to cell destruction and tissue death. It's particularly effective in preventing bed sores when used early in their development, and can speed healing of existing pressure ulcers by promoting blood transport to damaged areas.

The substance helps repair tissue by allowing blood to move to areas of damage while introducing other healing substances paired with it. Its bacteriostatic properties help prevent infection while allowing the body's natural healing processes to work more efficiently.

Question 15: What role does DMSO play in treating burns?

Answer: DMSO provides local anesthetic effects for burn treatment while simultaneously mobilizing skin tissue cells and improving oxygen delivery to damaged areas. It helps prevent infection by inhibiting various bacteria and fungi that typically attack damaged tissue, making it particularly valuable for treating second- and third-degree burns.

The effectiveness of DMSO in burn treatment is illustrated by a case where a cook suffering from second-degree burns from hot grease experienced complete recovery without scarring after treatment with a 50 percent DMSO solution combined with aloe vera gel juice. The treatment was applied immediately and continued at regular intervals.

Question 16: How can DMSO help with arthritis conditions?

Answer: DMSO addresses arthritis through multiple mechanisms, including pain relief, inflammation reduction, and improved joint mobility. For osteoarthritis and rheumatoid arthritis, it helps reduce swelling while improving joint function. When combined with MSM and vitamins D and K2, it provides comprehensive support for joint health.

The substance can be particularly effective when applied topically at 70 percent concentration with distilled water or aloe vera, allowing for deep penetration into affected joints. Its ability to carry other beneficial substances deeper into tissues makes it especially valuable when combined with other anti-inflammatory compounds.

Question 17: What role does DMSO play in treating headaches and migraines?

Answer: DMSO can prevent and treat headaches and migraines when applied immediately at the first sign of pain or during the prodrome

phase. The treatment involves applying a 50 percent solution over the temples, between the eyes, back of neck, throat, and liver area, working through multiple pathways to address pain and inflammation.

Its effectiveness stems from its ability to increase blood flow while reducing inflammation and pressure in blood vessels. When combined with magnesium and other supplements, DMSO provides a comprehensive approach to headache management that can prevent or reduce the severity of migraines.

Question 18: How does DMSO work for dental issues?

Answer: DMSO assists with dental health by addressing both surface and deep tissue issues in the mouth. It supports the body's natural remineralization processes and can help strengthen teeth when combined with proper nutrition and other dental hygiene practices. The substance's antimicrobial properties make it particularly useful for addressing gum disease and tooth infections.

The treatment works best when combined with other dental health supports such as remineralizing toothpaste and proper supplementation with vitamins A, E, D, and K2. DMSO's ability to penetrate deeply into tissue makes it especially effective when used as part of a comprehensive dental health protocol.

Question 19: How does DMSO assist in mental health treatment?

Answer: DMSO demonstrates potential in mental health treatment through its anti-inflammatory properties, as research has shown strong correlations between inflammation and various mental health conditions. Studies have documented success in treating conditions like schizophrenia, manic depression, and anxiety using DMSO treatments.

In one study, patients receiving intramuscular DMSO injections showed rapid improvement in symptoms, including decreased agitation, reduced paranoid feelings, and improved communication abilities. The treatment appeared to promote a sense of calmness and better cognitive clarity in patients.

Question 20: What are the essential safety guidelines for using DMSO?

Answer: Essential safety guidelines for DMSO use include ensuring absolutely clean skin before application, using only pharmaceutical-grade DMSO (99.995% pure), and starting with lower concentrations to test individual sensitivity. Clean skin is crucial because DMSO can carry any surface contaminants into the bloodstream.

The substance should never be used with pharmaceutical drugs without professional guidance, as it can enhance drug absorption and effects. Storage requirements must be met, keeping DMSO in dark glass

containers at appropriate temperatures, and users should always perform a patch test before beginning regular use.

Question 21: Why is clean skin crucial when applying DMSO?

Answer: Clean skin ensures no contaminants, toxins, or unwanted substances are carried into the bloodstream through DMSO's powerful penetrating abilities. Even sweat residue must be removed before application, as the skin eliminates toxins through sweating that could be reabsorbed if DMSO is applied over them.

This principle extends to avoiding application after activities like mechanical work or gardening, where residues might remain on the skin. Even natural body products or cosmetics should be completely removed before DMSO application, as its transdermal properties will carry whatever is present on the skin into deeper tissues.

Question 22: What are the contraindications for DMSO use?

Answer: One critical contraindication is the combination of DMSO with diuretic drugs, as DMSO itself has diuretic properties and the combination could be dangerous. Those with kidney function issues should exercise particular caution, as DMSO's affinity for water can affect kidney processes.

Individuals with silicone implants should avoid high-dose DMSO applications, particularly near implant sites. Those who have recently used Botox should also avoid DMSO, as it can dissolve and disperse the treatment. Pregnant women and nursing mothers should generally avoid DMSO except in very limited applications.

Question 23: How should DMSO be used during pregnancy and with children?

Answer: During pregnancy, DMSO use should be extremely limited due to insufficient research on its effects during gestation. While small amounts in skin creams (20% or less) might be acceptable for once-daily use, it's generally prudent to avoid DMSO during pregnancy and breastfeeding.

For children, DMSO can be used but only in limited capacity and lower concentrations. High doses and injections are not recommended for children due to their rapidly dividing nervous system tissue. Any pediatric use should be supervised by a qualified healthcare practitioner familiar with DMSO applications.

Question 24: What materials are compatible with DMSO?

Answer: DMSO is safely compatible with high-density polyethylene (HDPE), low-density polyethylene (LDPE), nylon, polyethylene

terephthalate ethylene (PETE), polypropylene (PP), and polytetrafluoroethylene (PTFE). These materials can be used for storage and application without risk of degradation or contamination.

The substance is incompatible with soft metals like aluminum, copper, iron, or tin, and can react with certain plastics including polycarbonate, polystyrene, and polyvinyl chloride. Glass containers are generally the safest option for storage, particularly for pure DMSO solutions.

Question 25: What is the recommended concentration for topical DMSO use?

Answer: For most topical applications, concentrations between 40% and 80% DMSO are recommended. Lower concentrations (40-50%) are advised for sensitive areas like the face or for use with animals, while higher concentrations (70-80%) may be used on tougher skin areas like the feet.

Pure 99.995% DMSO should generally be diluted before use, as repeated applications of full-strength DMSO can cause skin thickening and peeling. The ideal concentration often depends on the specific condition being treated and individual skin sensitivity.

Question 26: How should DMSO be diluted for different applications?

Answer: DMSO dilution varies by application type and target tissue. For eye treatments, concentrations should not exceed 40%, while skin applications typically use 50-70% solutions. Dilution can be done with distilled water, preservative-free aloe vera gel juice, or specific carrier solutions depending on the intended use.

The substance requires proper dilution calculations to achieve desired concentrations. For example, to create a 50% solution, equal parts of pure DMSO and the diluting agent should be mixed. Higher concentrations might be needed for treating deep tissue conditions, while lower concentrations work better for surface applications.

Question 27: How often can DMSO be safely applied?

Answer: DMSO can typically be applied 2-4 times daily for acute conditions, with approximately 2 tablespoons (1/2 ounce) being the maximum daily topical application amount. However, regular use should include periodic breaks - one day off per month for daily users, and a full week off after six months of continuous use.

The frequency of application should be adjusted based on individual response and the condition being treated. Some chronic conditions might require long-term regular application, while acute conditions might need only short-term intensive treatment followed by maintenance doses.

Question 28: What are the signs of a negative reaction to DMSO?

Answer: Common signs of negative reactions include excessive skin redness, burning sensation lasting beyond 20 minutes, itching, or swelling. While some warmth and temporary redness are normal, persistent or intense reactions suggest the need to reduce concentration or frequency of application.

More serious reactions might include breathing difficulties, facial swelling, or intense skin reactions, which require immediate discontinuation. These reactions often indicate that the body is unable to properly process the DMSO or that it's interacting with toxins in the system.

Question 29: How does DMSO function as an antioxidant and pro-oxidant?

Answer: DMSO can act as either an antioxidant or pro-oxidant depending on concentration, tissue pH, and other factors. As an antioxidant, it can destroy intracellular free radicals - a unique capability among antioxidants. At higher concentrations, it can donate oxygen molecules, acting as a pro-oxidant in certain situations.

This dual nature makes DMSO particularly valuable in various therapeutic applications, though proper dosing is crucial to achieve the desired effect. The substance's ability to switch between these roles allows it to address different types of cellular damage and support various healing processes.

Question 30: What is DMSO's role in DNA repair?

DMSO plays a critical role in DNA repair by enhancing the body’s levels of glutathione (GSH), a powerful antioxidant that protects cells from radiation-induced damage. It can accelerate the repair of DNA strand breaks and shield against the initial harm caused by ionizing radiation, making it beneficial for both preventive and therapeutic uses in radiation exposure scenarios. By supporting the body's natural repair mechanisms and preventing cellular mutations, DMSO has significant implications for cancer treatment and radiation protection.

Moreover, DMSO’s radioprotective effects extend to maintaining optimal glutathione levels, preventing cellular dysfunction when levels drop below critical thresholds. Its application, whether internal or external, can mitigate DNA damage if used before radiation exposure, such as during medical imaging procedures. Even after exposure, DMSO aids in healing damaged DNA and reducing radiation-induced inflammation, highlighting its versatility and importance in managing radiation-related risks.

Question 31: How does DMSO affect bacterial growth?

Answer: DMSO acts as a bacteriostatic agent, meaning it restrains bacterial growth without necessarily killing bacteria outright. This property allows the immune system to handle bacterial threats more effectively. Studies have shown that a 20% DMSO concentration can control the growth of various bacteria including E. coli, Staphylococcus aureus, and Pseudomonas.

The substance also demonstrates antifungal and antiparasitic properties. When combined with antibiotics, DMSO can help overcome drug resistance by allowing antibiotics to become effective again against resistant bacteria, potentially offering a solution to antibiotic-resistant infections in hospital settings.

Question 32: What is the mechanism behind DMSO's cryoprotective properties?

Answer: DMSO's cryoprotective abilities stem from its unique interaction with water molecules during freezing processes. When added to water as an antifreeze, it alters the thermodynamics of freezing in a way that allows 85% of cells to survive the process, preventing the damaging effects of ice crystallization.

This property makes DMSO invaluable for preserving organs, stem cells, and other biological materials at low temperatures. The substance's ability to protect cells during freezing while maintaining their viability has revolutionized organ transplantation and tissue preservation techniques.

Question 33: How does DMSO enhance the absorption of other substances?

Answer: DMSO enhances absorption through its unique ability to penetrate biological membranes while carrying other substances with it. It can transport both water-soluble and fat-soluble molecules across cell membranes, making it an exceptional carrier for various therapeutic compounds.

The substance achieves this through multiple mechanisms, including its ability to alter cell membrane permeability and its capacity to form complexes with other molecules. This enhancement effect can significantly increase the bioavailability of other substances, though it requires careful consideration when combining with medications.

Question 34: How is DMSO used in veterinary medicine?

Answer: In veterinary applications, DMSO is widely used for treating musculoskeletal disorders, particularly in horses where it has FDA approval for acute swelling treatment. The substance is typically applied

at lower concentrations than human applications, with careful consideration of the animal's size and condition.

When treating animals, DMSO is often combined with other therapies for enhanced effectiveness. The standardized dosing guideline is approximately 2 ml of pure DMSO for every 10 pounds of body weight, diluted appropriately based on the specific condition being treated.

Question 35: What are the approved veterinary applications for DMSO?

Answer: Veterinary approval for DMSO includes treatment of acute swelling in horses through products like Domoso, a 90% DMSO solution available in both liquid and gel formations. It's also approved for treating ear infections in dogs through products containing 60% DMSO concentrations.

Beyond these specific approvals, veterinarians often use DMSO off-label for various conditions including musculoskeletal injuries, arthritis, and joint disease. Its effectiveness in animal care has been well-documented through decades of use in both large and small animal practice.

Question 36: How do dosages differ for animals versus humans?

Answer: Animal dosages typically range from one-eighth to one-quarter of human doses, with careful consideration of the animal's weight and condition. The general guideline is 2 ml of pure DMSO per 10 pounds of body weight, diluted appropriately with distilled water to achieve concentrations between 20% and 50%.

Application methods also vary for animals, with particular attention paid to areas with less fur or where absorption will be most effective. Veterinary applications often require more frequent monitoring and adjustment of dosages based on individual animal response.

Question 37: What are the basic recipes for DMSO applications?

Answer: Basic DMSO recipes include antifungal drops (combining DMSO with iodine and distilled water), analgesic formulas (using DMSO with natural pain-relieving herbs), and eye drops (creating precise dilutions with saline solution). These formulations require careful measurement and mixing to achieve proper concentrations.

Each recipe serves a specific purpose and must be prepared using pharmaceutical-grade DMSO and appropriate dilution methods. Storage requirements for these preparations typically include dark glass containers and proper temperature control to maintain effectiveness.

Question 38: How can DMSO be combined with other natural remedies?

Answer: DMSO works synergistically with various natural substances including aloe vera, essential oils, and herbal extracts. When combining

with essential oils, careful dilution is necessary, typically using only 1-2 drops of essential oil per 10 drops of 80% DMSO solution.

The substance enhances the effectiveness of many natural remedies by improving their absorption and carrying them deeper into tissues. However, all combinations should be tested on a small area first to ensure compatibility and proper reaction.

Question 39: What are the recommended dilution ratios for different conditions?

Answer: Dilution ratios vary by condition and application site. For sensitive areas like the face, a 40% solution is recommended, while deeper tissue problems might require 70-80% solutions. Eye treatments typically use 20-40% solutions, and dental applications often utilize 50% concentrations.

Each dilution must be precisely calculated and prepared using appropriate materials. The general rule is to start with lower concentrations and adjust based on individual response and specific condition requirements.

Question 40: How does DMSO interact with alcohol?

Answer: DMSO's interaction with alcohol is complex and potentially dangerous. When taken simultaneously with alcohol, DMSO can actually protect against alcohol's damaging effects. However, when there's a time gap between DMSO and alcohol consumption, the effects can be severe, potentially doubling or quadrupling alcohol's impact.

The substance inhibits liver alcohol dehydrogenase, the enzyme responsible for breaking down alcohol. This interaction makes it crucial to avoid alcohol consumption while using DMSO, as documented in cases where individuals experienced intensified alcohol effects after DMSO exposure, even with moderate alcohol consumption.

Question 41: What substances should never be combined with DMSO?

Answer: DMSO should never be combined with diuretic drugs due to its own diuretic properties, as the combination could be dangerous. It should also not be used with toxic substances, heavy metals, or certain chemical compounds that could be carried into the bloodstream through DMSO's penetrating abilities.

Synthetic fragrances, cosmetics, and chemical-based skin products should be completely removed before DMSO application. Even chlorinated pool water should be avoided when using DMSO, as it could carry harmful chlorine compounds into the body.

Question 42: How does DMSO enhance other medications?

Answer: DMSO enhances medication effectiveness by increasing their absorption and penetration into tissues. This enhancement can allow for lower dosages of certain medications while achieving the same therapeutic effects. However, this property requires careful monitoring as it can also intensify both desired and undesired effects of medications.

The substance acts as a carrier, helping medications reach target tissues more effectively. This property has been particularly valuable in certain approved medical applications, though it requires careful consideration and professional oversight when combining with any pharmaceutical drugs.

Question 43: What natural substances work synergistically with DMSO?

Answer: DMSO works particularly well with vitamin C, creating enhanced antioxidant effects and improved tissue repair capabilities. It also combines effectively with aloe vera, essential oils like wintergreen and peppermint, and minerals like magnesium for enhanced therapeutic effects.

CBD oil and other natural anti-inflammatory substances can be combined with DMSO for improved pain relief and healing. These natural combinations often provide enhanced benefits while maintaining safety when properly prepared and applied.

Question 44: What is DMSO's future potential in medicine?

Answer: DMSO's future potential lies in its ability to enhance drug delivery, protect against radiation damage, and provide non-addictive pain relief. Its unique properties could revolutionize treatment approaches for various conditions, particularly in areas where current treatments are limited or problematic.

The substance's ability to cross the blood-brain barrier, combined with its anti-inflammatory and protective properties, suggests significant potential in treating neurological conditions and brain injuries. However, realizing this potential may require changes in regulatory approaches and increased research investment.

The Magic of DMSO

A Personal Story

Klimer has been a longtime supporter of this Substack and has been instrumental in my journey of discovery and learning. He has embarked on his own Substack journey with a personal story about DMSO. It's a compelling and practical read, and I'm pleased to share and amplify it here.

I highly recommend subscribing to keep up with Klimer's work. I hear his next piece will focus on Vitamin C, which I'm very much looking forward to.

With gratitude to Klimer.

The Magic of DMSO - by klimer - Eclectic Healing

Related

- The DMSO Handbook: A Practical Guide to its Uses and Applications
- The DMSO Handbook for Doctors
- Healing with DMSO
- DMSO Nature's Healer

Deep Dive Conversation (For Paid Subscribers)

Access this conversation here:

10 things to understand about DMSO that your doctor doesn't know

This discussion is informed by the 4 related posts above plus this post.

The Magic of DMSO

By klimer

Disclaimer: I write about my personal experiences, and what works for me may not work for you. I have no healthcare training, but I've been reading passionately on healthcare since being diagnosed with melanoma in early 2004 (which gave me a 50% chance of being alive by 2009, and the odds were not supposed to improve thereafter). I beat those odds by gaining my own education from published researchers, rather than relying upon my dermatologist's education (which is more geared toward understanding how to maximize how much insurance will reimburse him for his time). If you are on any sort of prescription medication, ALWAYS check with your doctor before trying any

substance that could interact with them. Or, better yet, ALWAYS take responsibility for your own chronic health problems!

I have recently found myself frequently providing comments on various author's Substacks regarding how DMSO has helped me, my wife, our friends and our dog, to which I at times get questions for more specific information. So I finally decided it was time to record all these thoughts and experiences in one place, where I can add to them over time, if appropriate. That way I can simply reply to people with DMSO questions by referring them to this page.

I first learned about DMSO around 2021 or so from Dr. John Bergman, DC (though I have never met him, he literally saved my life, so I hold him in the very highest esteem). My further education on the topic started with reading Amanda Vollmer's book, *Healing with DMSO (2020)* and *The DMSO Handbook for Doctors* (2013) by Helmut Fischer. But it took a Substack series on the topic by A Midwestern Doctor in his *The Forgotten Side of Medicine* before I witnessed my first DMSO miracle. At which point, I promptly became a disciple of both AMD and DMSO.

NOTE: It is ESSENTIAL to read any of the above references to learn about the few necessary caveats to using DMSO. It is incredibly safe, effective and cheap, when you understand how it works. For instance, it has properties that can be problematic in the presence of environmental toxins. Ladies, think make-up here, or things like cleaning products. Guys, think about grease from working on your car, pesticides used for lawn care, or that cheap aftershave your daughter gave you for Christmas, etc. You don't want DMSO making it easier for crap like that to get sucked into your body! Bad things are virtually guaranteed to happen.

Vestibular Problems and TIAs

During the winter of 2021/2022, our then 13-year-old dog, Lana, experienced an acute health crisis. She became very unbalanced and wobbly, lost some of her hearing and eyesight, and seemed to be experiencing a cascade of additional minor health problems. The vet diagnosed the primary problem as a vestibular issue - an inner ear problem that affects balance. We were told the cause is idiopathic (Latin Doctorspeak for "of an unknown origin") and that it would either get better or get worse.

My wife is a retired registered nurse, and she had thought that, prior to the big vestibular event, Lana seemed to be experiencing increasingly frequent, but short, trans ischemic attacks (TIAs), which are mini-strokes. It was a short while later when one of A Midwestern Doctor's

(AMD's) posts mentioned that **DMSO applied to the carotid arteries of your neck can stop a stroke in seconds**. My wife, with 40 years of nursing experience, was highly skeptical. If that was possible, why had she not heard of it? And how dangerous is this DMSO stuff anyway? You'll find the answers to those questions in AMD's Substack (short answer to the latter: not very, when you know how it works).

When Lana would have a TIA, for a while later she would experience these odd, repetitive eye movement patterns. Some would resolve in a few minutes, some would go on for an alarmingly long time. During one such episode we rubbed a small amount of rose scented 70% DMSO/30% aloe vera on her belly (the easiest access to skin on most dogs). In seconds, the eye movements stopped! Since then, we've made it a daily routine to rub a small amount of DMSO on her belly, and she has not had a TIA since (at least not that we've seen). Prior to DMSO, she had more than a dozen TIAs that we noticed, and probably quite a few more that went unnoticed. Things had gotten so bad, that we thought sure she had started the process of circling the drain, and that she'd be leaving us before long. I'm writing this nearly two years later.

Lana in September 2024 in our Camp Inn teardrop camper, during one of her many cross country trips (she is remarkably well traveled for a dog).

I now apply a small amount of DMSO cream to my carotids most mornings, as a cheap form of stroke insurance. Doing so has improved my mental clarity and reduced my skin dryness.

Silky Coat/Hair

In late 2024, Lana experienced an acute loss of additional vision. We suspect that she now has virtually no vision in her left eye, and mainly navigates based on blurry light and contrast that is discernible solely with her right eye. She does well with direct overhead lighting; she struggles in low light during the evening. And also in bright, reflected light (from, for instance, a low sun angle reflecting off the sidewalk), which can blind her perception of contrast. It was in the latter conditions when one day we were out for a walk. We crossed the street and she walked directly into the tire of a parked Mercedes Benz! You can't get much better contrast than a black Benz on a sunny day! That's when I learned that she was not the only one who had to learn to adapt to her new limitations. I now steer her with her lead, to keep her from running into things. We thought it likely the additional loss of vision was due to a TIA that we had not witnessed (which I believe was related to getting an update of the rabies vaccine - her initial vestibular problems had also started not long after receiving a vaccine).[1]

Since we were already doing the daily DMSO cream routine, we scratched our heads, wondering what else to do? We decided to try adding a few drops of 100% DMSO to her food. For years, we had been giving her daily salmon oil, to help keep her coat shiny, but despite the effort, her fur was dry and brittle. Within three days of starting the DMSO drops, it was clear that her coat was rapidly becoming softer and silkier. Today, it is silkier than at any point since we've had her! And she has not had another TIA since adding this routine. We're also finding a lot less dog hair when we vacuum the house every week.

I shared the above anecdote in a Substack comment, and a woman replied that she was going to start taking a few drops of DMSO every day to see if it would help her hair. What if there is no need for conditioner or fancy hair routines in order to have soft, silky hair later in life? Who wouldn't welcome even the tiniest improvement in health?

Gout

One day about a year ago, my wife awoke to sharp pain in one of her thumb joints and soon recognized it as gout. She tried all of her acquired medical magic on it, to no avail. She then finally told me about it and asked what I would recommend? I said she should try rubbing DMSO cream on it a few times per day, and see what happens. Within three

days the pain completely resolved. She now takes a daily tart cherry supplement to avoid recurrence, and she remains gout-free.

Back and Knee Pain

One of my wife's early life experiences was in college, where for ROTC she repeatedly jumped out of a perfectly good airplane in the skies above Florida. Unfortunately, she had one bad landing, which resulted in a lifetime of problems and pain. In 2023, things had become bad enough that she feared that she would soon lose her mobility, and likely face the remaining years of her life in chronic, debilitating pain. That's the problem from having been a nurse, she clearly understood the negative trajectory that she was on. So, what to do?

In her forty years in healthcare, my wife had access to far more resources for dealing with her back problem than the average patient. She worked with a world class cancer research doc at one point in her career at a large university medical center (where she was unofficially the dubbed the local prostate queen), so there were lots of resources to possibly find someone with the unique knowledge to help with her specific problem.

But all her efforts netted only a recommendation for back surgery (which almost everyone recommended to put off AS LONG AS POSSIBLE),[2] and a willingness to write her a prescription for every new pain med that happened along. She mostly got by on NSAIDS, and had the best luck with Vioxx, before it was pulled from the market. Most recently, she had been using Diclofenac. Fortunately for her, she cannot tolerate narcotics, or who knows where we would be now if she had headed down that path? Nobody ever suggested that she see a chiropractor (since all competitors to allopaths are derisively called quacks).

Of our own efforts at finding a solution to her problem, we discovered chiropractic care while wintering in Florida one season. It didn't fix the problem, but the pain became less severe and more manageable. And a few other minor health problems got resolved in the process.

We returned home, where we found a local chiropractor who was also a functional med doc, so we sought his opinion on what else to do. He would do adjustments now and then, but mainly relied upon acupuncture and frequency specific microcurrent (FSM) to keep the pain under control. When he first looked at an x-ray of her back, he was surprised that she wasn't in constant, intractable pain, as there was hardly any disc visible! He was not at all hopeful that her 50-year-old injury could be healed. At best, he would help delay the inevitable.

Then AMD wrote a post about the Cell Danger Response (CDR): how the body will put cells into a hibernation phase during acute stress, when there are insufficient resources to maintain all cells, and that certain

nutrients are needed to wake them back up. I soon found a case study about urolithin A helping to resolve the CDR for an unrelated back malady. Nothing implied it could help her damaged disc, but at least it had worked on a different problem in the same general neighborhood. Around the same time, my wife began using DMSO cream on her back, together with a jade and tourmaline infrared heating pad. Things quickly improved to where she very rarely needed any NSAIDs. Was it the urolithin A, or the DMSO, or the heating pad, or any two of them, or all three? Placebo effect? Just blind luck? There's no way to know. We are simply thankful that this ritual somehow seems to have worked.

Our doc was amazed, and thought it indicated that there actually was some healing going on. So, on his recommendation, we followed that up with prolozone therapy[3] and platelet rich plasma treatment, both of which are intended to encourage further healing. Right now, her back is in better shape than it has been in decades, and she is off pain meds for the first time in 30 years. She still has limitations and has to be mindful to not cause things to regress. In the future we may also consider stem cell therapy, but for now she is happy with enjoying more health than she did twenty years ago. At some point we'll likely get an x-ray to see how things look, but since x-rays have their own health risks, we are in no hurry to do so.

Recently, a friend in Texas also started using DMSO cream to see if it would help his decades-old knee pain, and was very excited that it was helping!

Vascular Circulation & Varicose Veins

My sister, who is two years older than me, has a LOT of vascular issues and has relied upon traditional treatments for relief (vein stripping and drugs). I, on the other hand, have a severe allergy to allopaths,[4] resulting from too few positive encounters with them during the past seven decades of my life. So I always seek out books that others have written on a health topic, and/or the advice of my functional medicine doctor. I rely upon MDs (Medieval Doctors) only as a last resort (except for trauma, which is where they are phenomenally skilled - they only suck at chronic health problems).[5]

In 2023, I had developed acrocyanosis in both feet, which basically means they would turn purple if I sat too long: a clear sign my circulation was in bad shape. I suspect this was part of the cascade of health issues I experienced that started with severe heart issues in late 2018, about which I will write in a future post. There's little doubt in my mind that an MD would have instantly had me on blood thinners for life. But I prefer to let my body heal itself, and went looking for other options.

One of AMD's posts claimed that one of DMSO's many properties was its ability to dissolve blood agglutination, which was likely part of my acrocyanosis. Essentially, red blood cells in unhealthy people can stick to one another like a stack of Frisbees, which are termed rouleaux. The rouleaux gum up your capillaries and block circulation, which is not good. I tried DMSO for a while and it seemed to help, but I needed to be very religious about applying it. So it was more like symptom relief, than actually fixing the underlying problem (which was, like ALL chronic disease, multi-factorial). When I did use DMSO consistently, it would resolve a varicose vein on the back of my left knee, but once I'd declare to myself "problem solved!" and moved on, it would eventually return.

According to several sources, there are at least a couple of things that can help clear out veins and arteries from all the damage done to them over the course of a lifetime. Those include nattokinase (an enzyme derived from fermented soy) and bromelain (an enzyme from pineapple and other fruits). Once I started taking nattokinase, my left knee varicose vein resolved, without the need for regular DMSO applications. It seems to be helping with the acrocyanosis (I'm writing this is winter, and it is easier to notice in the summer when I don't wear socks). I've heard that it can take a year of nattokinase supplementation to really make a difference, and at present I've been using it for a couple of months. I don't supplement with bromelain, because I make it a habit to eat pineapple whenever I eat steak. I have weak digestion, and the pineapple helps break down the steak proteins, resulting in more complete digestion.

Cherry Angioma

I had developed a small cherry angioma (a small red spot) on my face. My dermatologist didn't offer any suggestions, though he likely would have been happy to cut it out. It completely resolved after several DMSO applications and has not returned more than a year later. A half-hearted attempt at doing the same to a larger cherry angioma on my chest has not been successful, suggesting that this treatment might be more effective on newly formed angiomas.

Tendonitis

My wife recently experienced tendonitis on the back of her left hand. DMSO plus immobilizing her wrist helped to reduce the pain and give her body the time needed to heal naturally.

DMSO Sources

AMD has lots of recommendations about the best sources of DMSO (which are NOT found in your local tractor supply store). Check out his

posts for more detail. We use three different products (AMD recommends products 1 and 3):

1. Nature's Gift rose scented 70% DMSO/30 % aloe vera cream. By far, we use this product the most. DMSO has a natural garlic/sulfur smell, and this is the only product I've found that avoids that issue. A little bit goes a long way, and the aloe vera is great for your skin.
2. Heiltropfen DMSO and Magnesium Oil. This comes with a dropper for dispensing. It is what Lana gets in her food, and which I use from time to time. Nearly everyone is magnesium deficient,[6] despite what your blood work might say. Your body keeps blood magnesium levels in a very tight range, correcting deficiencies by stealing extra from cells when necessary. If your bloodwork shows you are magnesium deficient, you are in a serious health crisis, or soon will be. More than likely, you'll die of a heart attack before this shows up in your lab results. Blood magnesium is a worthless metric for disease prevention. If you ever perceive your heart pounding (except when you are doing some insane level of aerobic exercise), consider learning about magnesium. Get enough magnesium onboard and your heartbeats will soften, and you'll likely see your blood pressure improve (so be careful if you are on prescription BP meds!). You'll likely sleep better as well.
3. DMSO Store 100% DMSO. The only downside to this product is that they don't give you a dropper with the bottle. Either figure out what size dropper fits the size of bottle you purchase, or transfer some to a small dropper bottle for dispensing. Though there are folks who regularly take spoonfuls of DMSO, so a dropper isn't always necessary.

1

What? Vaccines can be harmful? I know that to most people this is heresy, but see Christopher Exley's Substack on aluminum for at least one reason why the vaccines could have caused harm. Then decide for yourself.

2

Fantastic advice!

3

I believe this is done in case some part of her pain might have been caused by a problem with the fascia. Since allopaths ignore anything they don't understand - like fascia - this is deemed by them to be quackery.

Their use of the term quackery is a testament to their profound ignorance about far too many things.

4

Not everyone is familiar with the term allopath. Allopathic medicine is a flavor of medicine (drugs and surgery) practiced by MDs. ODs practice osteopathic medicine, DCs practice chiropractic medicine, OMDs practice a form of Chinese medicine, etc. It's pretty much just allopathic and osteopathic medical treatment that insurance will reimburse for (osteopaths have largely been co-opted into the allopathic fold).

5

MDs are cheaper in the short term, because insurance will reimburse for selected treatments, but you generally only get temporary symptom relief. And if you are prescribed drugs for symptom management, they sometimes result in new diseases that need to be treated (kind of like what would happen if you hired an arsonist to work for the fire department). The others are more expensive in the short term (insurance won't reimburse for them, because the goal of insurance is to maintain the allopathic near monopoly on healthcare), but you are much more likely to get far longer-lasting relief, and will often find that other health issues mysteriously disappear as a result.

6

I recommend this book published in 2011 by Dr. Mark Sircus (you can find cheap used copies on eBay).

The DMSO Handbook for Doctors

By Archie H. Scott – 50 Q&As – Unbekoming Book Summary

AMD mentioned this book in a recent article (part of the DMSO series).

Likewise, the DMSO field soon noticed DMSO helped a lot of skin conditions, to the point some doctors began using DMSO as their default treatment for challenging skin lesions when they weren't sure what else to do (as it often worked and posed no risk to their patients).

AMD was referring to this book:

The DMSO Handbook for Doctors: Scott, Archie H.

I've decided to add it to my own ***DMSO Series*** of book summaries, which includes:

Healing with DMSO

DMSO Nature's Healer

With thanks to Archie Scott.

12-point summary

1. **Fundamental Discovery and Properties**: DMSO, discovered in 1866 and developed medically in 1961, is a natural compound with unique abilities to penetrate cellular membranes, cross the blood-brain barrier, and act as the most powerful known free radical scavenger.
2. **Safety Profile**: Through extensive studies, particularly the Vacaville prison trials, DMSO has demonstrated remarkable safety even at doses 3-30 times normal therapeutic levels, with no documented fatalities or serious adverse reactions despite millions of users worldwide.
3. **Emergency Medicine Impact**: DMSO shows crucial effectiveness in emergency situations, particularly stroke and brain injury treatment, where immediate application can prevent secondary damage and improve recovery outcomes significantly.
4. **Cancer Treatment Enhancement**: Studies show DMSO can make chemotherapy more effective while reducing its toxicity, enabling lower doses with better results. The Chile study demonstrated 57 out of 65 terminal cancer patients showed improvement when DMSO was combined with conventional treatment.

5. **Neurological Applications**: Research demonstrates significant effectiveness in treating various neurological conditions, including Alzheimer's, where 18 patients showed notable improvements in memory and cognitive function within three months of treatment.
6. **Anti-inflammatory Properties**: Unlike conventional anti-inflammatory drugs, DMSO reduces inflammation without harmful side effects, showing particular effectiveness in arthritis treatment where studies demonstrated 85% improvement in osteoarthritis patients without the risks associated with traditional medications.
7. **Tissue Penetration Benefits**: DMSO's unique ability to penetrate tissue and carry other medications with it makes it an exceptional delivery system, enhancing the effectiveness of antibiotics, pain medications, and other therapeutic agents.
8. **Treatment Timing Significance**: While immediate treatment provides optimal results, particularly in acute conditions, DMSO has shown effectiveness even in treating long-standing conditions, demonstrating value in both emergency and chronic care situations.
9. **Economic Healthcare Impact**: The potential for reduced medication dosages, prevented complications, and shortened recovery times suggests significant possible healthcare cost reductions through widespread DMSO implementation.
10. **Mental Health Applications**: Studies in Peru showed remarkable improvement in mental health conditions, particularly in acute cases, with 14 out of 14 acute schizophrenic patients showing significant improvement and hospital discharge within 45 days.
11. **Preventive Medicine Role**: Regular DMSO use may prevent various conditions through its free radical scavenging properties and ability to improve circulation, potentially extending life expectancy and maintaining better health into advanced age.
12. **Legal Status Evolution**: Court decisions have established that once approved for one condition (interstitial cystitis in 1978), doctors can legally prescribe DMSO for other conditions according to their professional judgment.

50 Questions & Answers

1. What is DMSO and how was it discovered?

DMSO (dimethyl sulfoxide) is a natural chemical compound derived from trees as a byproduct of paper manufacturing. It consists of two methyl groups and a sulfur and oxygen atom. Russian chemist Alexander Zaytsev first synthesized it in 1866, though it remained largely ignored for over 80 years. During the late 1940s, industrial chemists began investigating its solvent capabilities, leading to commercial development in the 1950s by Crown Zellerbach, which became the largest producer of DMSO worldwide.

The medical applications of DMSO were discovered when Robert J. Herschler, supervisor of applications research at Crown Zellerbach, met Dr. Stanley Jacob in 1961. Dr. Jacob, head of the organ transplant team at Oregon Health Sciences University, was searching for a way to preserve transplant organs at low temperatures without ice crystal formation. This meeting led to the discovery of DMSO's remarkable medical properties.

2. What are the primary mechanisms of action that make DMSO effective as a medical treatment?

DMSO operates through several unique mechanisms that make it extraordinarily versatile in medical treatment. It functions as one of the most powerful free radical scavengers known, helping prevent cell damage throughout the body. This action can prevent the development of various ailments and slow the aging process. Additionally, DMSO has an immune normalizing effect, making it valuable in treating autoimmune diseases while helping the natural immune system fight off various infectious diseases.

The compound also acts as a vasodilator, increasing blood flow and allowing blood to more easily reach damaged areas. This property is particularly important in injury treatment, as decreased blood flow to an injury site often causes additional damage beyond the initial trauma. DMSO can pass through the skin and other cellular membranes of the body, and is one of the few substances able to cross the blood-brain barrier, allowing it to carry other beneficial compounds with it.

3. How does DMSO's ability to cross the blood-brain barrier impact its medical applications?

DMSO's ability to cross the blood-brain barrier makes it uniquely valuable in treating various neurological conditions and brain injuries. This property allows it to deliver medications directly to brain tissue that would otherwise be inaccessible due to the protective nature of the

blood-brain barrier. When treating conditions such as stroke, traumatic brain injury, or Alzheimer's disease, DMSO can carry therapeutic agents directly to affected areas of the brain.

The blood-brain barrier crossing capability also means DMSO can help reduce brain swelling and improve oxygen delivery to brain tissue. In cases of stroke or head trauma, this ability becomes crucial as it allows for immediate intervention to prevent secondary damage caused by swelling and oxygen deprivation. This property has made DMSO particularly valuable in emergency medicine, where rapid delivery of therapeutic agents to brain tissue can mean the difference between recovery and permanent damage.

4. What are the main ways DMSO can be administered to patients?

DMSO can be administered through multiple routes depending on the condition being treated and the urgency of the situation. The most common methods include topical application directly to the skin, oral consumption mixed with juice or water, intravenous administration via slow drip, and intramuscular injection. For specific conditions like eye problems or dental issues, it can also be applied as drops or used as a mouth rinse.

The concentration and method of administration vary based on the condition being treated. Topical applications typically use concentrations ranging from 50% to 90%, while oral consumption usually involves lower concentrations mixed with liquids. Intravenous administration is often used in emergency situations or for severe conditions, with dosages carefully calculated based on body weight. Multiple administration methods can be combined for maximum effectiveness in treating certain conditions.

5. How does DMSO function as a free radical scavenger and why is this important?

DMSO acts as one of the most potent free radical scavengers known to medical science. Free radicals are unstable charged molecular fragments that attack other molecules, causing severe damage to cells throughout the body. This disrupts normal organ functioning and can lead to various degenerative conditions. DMSO's ability to neutralize these harmful molecules makes it uniquely valuable in preventing and treating numerous ailments.

The free radical scavenging property is particularly important because free radical damage accumulates over time, potentially leading to conditions such as cancer and arthritis, while also contributing to premature aging. Regular use of DMSO may prevent some serious

ailments by consistently neutralizing free radicals before they can cause significant cellular damage. This protective effect has been demonstrated in various studies, particularly in cases involving radiation exposure and inflammatory conditions.

6. What role does DMSO play in the treatment of brain injuries, and why is timing crucial?

In brain injuries, DMSO provides multiple beneficial effects that can prevent permanent damage. It reduces edema, acts as an anti-inflammatory agent, increases oxygen supply, and as a free radical scavenger helps protect cells from mechanical damage. When infused, DMSO causes an immediate increase in blood flow to the brain, crucial because much permanent damage in head injuries is caused by reduced blood flow resulting in oxygen deprivation to brain tissue.

Treatment timing is critical because brain tissue is extremely fragile and can deteriorate rapidly when deprived of oxygen. While the best results occur when treatment starts within minutes of injury, there is no absolute time limit. DMSO can help remove excess blood that compresses the brain and reduce water accumulation causing pressure on vital brain areas. Studies in Turkey showed significant reduction in intracranial pressure when DMSO was administered to patients with closed head trauma.

7. How does DMSO differ from conventional arthritis treatments, and what makes it potentially more effective?

Unlike conventional arthritis treatments that primarily focus on pain reduction through potentially harmful medications, DMSO addresses multiple aspects of arthritis. While NSAIDs and other conventional treatments can actually inhibit cartilage production while blocking inflammation, DMSO reduces inflammation without harmful side effects. It improves blood flow to damaged areas, provides biologically available sulfur to damaged joints, and acts as a powerful free radical scavenger.

A significant study in Brazil confirmed the relationship between free radical synthesis and arthritis, showing a 66% decrease in free radical production after DMSO administration. The study demonstrated good clinical improvement in 85% of osteoarthritis patients and 77% of rheumatoid arthritis patients, achieved without using steroidal or non-steroidal anti-inflammatory drugs. These results were long-lasting and obtained without the negative side effects associated with conventional treatments.

8. What evidence exists for DMSO's effectiveness in treating cancer, particularly when combined with conventional treatments?

A major cancer study conducted in Chile between 1969 and 1971 demonstrated significant results when DMSO was combined with cyclophosphamide and amino acids. Of 65 terminal cancer patients who had not responded to conventional treatment, 57 showed objective or subjective remission. The study revealed that DMSO not only reduced the toxicity of chemotherapy but also enhanced its anti-cancer activity, allowing for lower, safer doses while maintaining effectiveness.

Laboratory studies have shown DMSO's direct anti-cancer properties. Dr. Charlotte Friend at Mt. Sinai Hospital found that when DMSO was added to test cultures, cancer cells changed and became like normal cells. Nova University research showed that combining DMSO with cyclophosphamide produced strong anti-cancer activity without lowering white blood cell counts, a common side effect of conventional chemotherapy. When treatment started early enough, implanted cancers were eliminated and some rats were considered cured.

9. How does DMSO protect against radiation damage, and what are its practical applications in this area?

DMSO provides protection against radiation damage through multiple mechanisms, including free radical scavenging and direct DNA protection. A study at Kyoto University showed that even low concentrations (0.5%) of DMSO could protect DNA from radiation damage by helping repair double-strand breaks. This protective effect works not only against therapeutic radiation but also against environmental radiation exposure, making it valuable for both medical and emergency applications.

Russian studies demonstrated DMSO's effectiveness in preventing radiation burns in cancer patients receiving radiation therapy. When applied topically before treatment, patients showed none of the normally expected radiation burns or toxic reactions. This makes DMSO particularly valuable for radiation therapy patients and potentially for people exposed to radiation from nuclear accidents. The compound can be administered through various methods including topical application, oral consumption, or injection, depending on the type and severity of radiation exposure.

10. What are the documented safety studies of DMSO, particularly the Vacaville prison studies?

The Vacaville State Prison Hospital conducted two major toxicology studies in 1967 and 1968, consisting of both short-term (14 days) and

long-term (90 days) evaluations. These studies used 80% DMSO applied topically at rates 3 to 30 times higher than normal treatment doses. The short-term study involved 65 subjects receiving DMSO and 33 controls, while the long-term study included 40 patients completing treatment and 16 controls.

Both studies showed remarkable safety profiles with no serious side effects beyond minor skin drying and scaling, which resolved within three weeks of treatment cessation. Comprehensive physical examinations, blood work, and ophthalmological testing showed no significant negative changes. Most importantly, these studies definitively proved that the concerning eye lens changes seen in certain animal species did not occur in humans, even at extremely high doses over extended periods.

11. How does DMSO's interaction with other medications enhance their effectiveness?

DMSO's unique ability to penetrate cellular membranes and carry other substances with it makes it an exceptional delivery system for various medications. When combined with antibiotics, chemotherapy drugs, or other therapeutic agents, DMSO can enhance their effectiveness by improving delivery to target tissues. This property is particularly valuable in treating deep-seated infections or tumors that might otherwise be difficult to reach with conventional delivery methods.

The enhancement effect also allows for lower doses of potentially toxic medications while maintaining or improving therapeutic results. This was demonstrated in cancer studies where combining DMSO with cyclophosphamide allowed for reduced chemotherapy dosages while achieving better outcomes. The combination therapy approach has shown success in treating various conditions, from skin infections to brain tumors, with improved results compared to single-drug treatments.

12. What is the significance of DMSO in treating stroke patients?

DMSO's effectiveness in stroke treatment stems from its ability to cross the blood-brain barrier and its multiple therapeutic actions. It helps remove excess fluid from the brain, reducing dangerous pressure that can cause additional damage after a stroke. The compound also improves blood flow to affected areas, helping restore oxygen supply to damaged tissue and potentially preventing further cell death.

Treatment timing is crucial, but unlike many stroke interventions, DMSO can still provide benefits even when treatment is delayed. Numerous cases document significant recovery in stroke patients treated

with DMSO, including patients who remained in comas for extended periods. The compound's ability to reduce swelling, improve circulation, and protect brain tissue makes it valuable in both immediate stroke intervention and long-term recovery.

13. How has DMSO demonstrated effectiveness in treating Alzheimer's and other forms of dementia?

DMSO has shown remarkable potential in treating Alzheimer's disease through its ability to dissolve amyloid proteins, which are consistently present in the brain lesions of Alzheimer's patients. A significant study presented at the Fourth International Conference on Alzheimer's Disease showed that 18 patients treated with DMSO demonstrated notable improvements in memory, concentration, and communication after just three months, with even more significant improvements after six months.

The compound's ability to increase blood flow in the brain and help neurons communicate more effectively makes it valuable for treating various forms of dementia. DMSO also causes immature brain cells to mature in laboratory settings and can help prevent the deterioration of mental capabilities with age. Regular use may help maintain cognitive function into advanced age by ensuring adequate blood flow and nutrient delivery to brain tissue.

14. What role does DMSO play in athletic injury treatment and prevention?

DMSO serves both therapeutic and preventive roles in athletic injuries. It can reduce inflammation and prevent much of the damage that occurs after the initial injury due to free radical activity. Athletes have successfully used DMSO before and after competition to minimize injury risk and speed recovery. The compound's ability to reduce swelling and improve blood flow makes it particularly effective in treating both acute injuries and chronic conditions resulting from repeated stress.

Numerous success stories support its effectiveness, including cases from professional sports and Olympic athletes. Coach Sam Bell from Oregon State University was one of the first to use DMSO for athletic injuries, helping his athletes recover from chronic conditions that had previously prevented them from competing effectively. The compound's ability to prevent secondary damage and promote healing has made it valuable in both immediate injury treatment and long-term recovery programs.

15. How does DMSO help in treating mental illness and what studies support this?

A major study in Peru involving 42 patients with various mental health conditions demonstrated DMSO's effectiveness in treating psychiatric disorders. The study included patients with schizophrenia, manic-depressive psychosis, alcoholic psychosis, and severe anxiety states. Treatment with DMSO resulted in rapid improvement, particularly in acute cases, with many patients showing dramatic reduction in agitation and other symptoms within days of starting treatment.

The results were particularly impressive for acute schizophrenic patients, with 14 out of 14 acute cases showing significant improvement and being discharged within 45 days. Even chronic cases showed some improvement, though less dramatically than acute cases. The study demonstrated that DMSO could provide effective treatment for various mental health conditions without the side effects associated with conventional psychiatric medications, particularly in early intervention cases.

16. What makes DMSO effective in treating skin conditions and wound healing?

A major study in Chile involving 1,371 patients with chronic skin ulcers demonstrated DMSO's remarkable healing properties when combined with antibiotics and anti-inflammatory agents. The treatment showed a 95.04% success rate, with patients completely recovering and resuming normal activities. The effectiveness stemmed from DMSO's ability to penetrate tissue, carry other medications deeper into affected areas, and promote healing through improved circulation.

The compound's success in treating various skin conditions, from diabetic sores to infected wounds and burns, illustrates its versatility in dermatological applications. Even cases that had resisted conventional treatment for years showed improvement, often within weeks of starting DMSO therapy. The treatment proved particularly effective for deep wounds and chronic ulcers, with many patients experiencing complete healing after decades of unsuccessful conventional treatments.

17. How does DMSO contribute to the treatment of Multiple Sclerosis?

DMSO's effectiveness in treating multiple sclerosis varies depending on the type of MS present. In the remitting form, Russian studies showed significant positive results, including remyelination, reduction in edema, and improved communication between nerve cells. These improvements were particularly notable because they addressed the fundamental

problems of MS by helping restore the myelin sheaths around nerve cells.

While results were less dramatic in progressive MS cases, DMSO still showed benefit. The treatment protocol typically involves both systemic and local application, with some patients receiving regular injections combined with oral consumption. Many patients who were previously confined to wheelchairs or beds have shown remarkable improvement, regaining mobility and function, though results vary significantly between individuals.

18. What is the relationship between DMSO and pain management?

DMSO demonstrates exceptional pain-management capabilities across various conditions, from post-surgical pain to chronic conditions. A controlled study at Pennsylvania Hospital in Philadelphia showed that patients receiving DMSO after open chest surgery required only half the normal amount of pain medications and experienced fewer complications such as nausea and vomiting. The compound proved particularly effective in treating phantom limb pain, where conventional pain medications often fail.

The pain-relieving properties of DMSO work through multiple mechanisms, including reducing inflammation, improving blood flow, and addressing the underlying causes of pain rather than just masking symptoms. Unlike many conventional pain medications, DMSO doesn't just block pain signals but helps heal the underlying condition causing the pain, making it particularly valuable for chronic pain management without the risks of addiction or organ damage associated with traditional painkillers.

19. How does DMSO help in treating respiratory conditions?

A significant study in Chile involving 60 babies with severe bronchiolitis demonstrated DMSO's effectiveness when combined with conventional treatments. When administered as an aerosol spray containing DMSO, antibiotics, and anti-inflammatory drugs, 80% of babies showed improvement in sensorial and coughing symptoms within 30 minutes, and 75% demonstrated decreased respiratory rate and improved breathing ability. The treatment proved particularly effective in decreasing inflammatory processes and reducing the viscosity of respiratory secretions.

DMSO's effectiveness in treating respiratory conditions extends beyond infant care to adult respiratory problems, including asthma and other chronic conditions. Its anti-inflammatory properties, combined with its ability to carry other medications deeper into tissue, make it particularly

valuable in treating both acute and chronic respiratory conditions. The compound helps reduce inflammation while improving oxygen delivery to affected tissues.

20. What is the significance of DMSO in emergency medicine?

DMSO's versatility and safety profile make it ideally suited for emergency medicine applications. Its ability to reduce swelling, improve circulation, and protect cells from damage makes it valuable in treating various emergencies, from trauma to stroke. The compound can be administered through multiple routes depending on the situation, allowing for flexible treatment approaches in emergency settings.

Despite its proven benefits, DMSO remains underutilized in emergency medicine. Medical professionals argue that all ambulances and emergency rooms should carry DMSO, as it can provide immediate benefits in various emergency situations without risk of harmful side effects. Its ability to prevent secondary damage in traumatic injuries and its effectiveness in treating various acute conditions make it particularly valuable in emergency settings.

21. How does DMSO treatment affect cirrhosis of the liver?

Studies with terminal cirrhosis patients demonstrated significant improvement when treated with DMSO in aloe vera juice. In one study, eight out of twelve patients who continued treatment for six months showed greatly improved liver function tests and reduced symptoms, including decreased vomiting and overall health improvement. These patients, initially given less than a year to live, survived beyond the one-year mark with improved quality of life.

However, DMSO treatment for cirrhosis requires commitment to lifestyle changes, particularly the cessation of alcohol consumption. The compound helps heal liver tissue naturally, but cannot overcome continued damage from alcohol or other harmful substances. The treatment typically involves regular oral administration of DMSO, often combined with other therapeutic agents.

22. What role does DMSO play in treating diabetic complications?

DMSO has shown particular effectiveness in treating diabetic neuropathy and circulation problems common in diabetic patients. The compound's ability to improve blood supply by dilating small blood vessels makes it especially valuable in preventing and treating diabetic-related amputations. Numerous cases document the prevention of scheduled amputations through DMSO treatment, particularly when combined with proper diabetic care.

While DMSO doesn't replace insulin in diabetic treatment, it can help reduce insulin requirements in some patients and significantly improve quality of life by addressing complications. The compound's ability to improve circulation and reduce neuropathy symptoms makes it particularly valuable as a complementary treatment for diabetes, especially in preventing severe complications that often lead to amputation.

23. How does DMSO help with eye conditions and what studies support this?

Dr. Robert Hill's pioneering studies demonstrated DMSO's effectiveness in treating various eye conditions, particularly retinitis pigmentosa. In a study of 50 patients with either retinitis pigmentosa or macular degeneration, 22 showed improved visual acuity, nine had improved visual fields, and five showed improvement in dark adaptation. Only two patients continued to deteriorate, while the remainder maintained stable condition.

The treatment protocol typically involves using a 40% DMSO solution applied directly to the eye. Despite initial concerns about potential toxicity to the eyes based on animal studies, human applications have proven both safe and effective. Many patients with various eye conditions, from macular degeneration to general vision problems, have reported significant improvement with regular DMSO treatment.

24. What is the legal status of DMSO and how has this evolved?

The legal status of DMSO was clarified through a significant court case involving Dr. H. Ray Evers. The case established that once a drug is approved for one condition, physicians have the legal right to use it for other conditions according to their professional judgment. This ruling came from the Federal District Court for the Middle District of Alabama, establishing an important precedent for DMSO use in medical practice.

After DMSO's approval for interstitial cystitis in 1978, doctors gained the legal right to prescribe it for other conditions. The court ruled that the FDA has no right to interfere with private medical practice by limiting doctors from treating according to their best judgment. This decision effectively protected doctors' rights to use DMSO in treating various conditions beyond its initial approved use.

25. How does DMSO help in treating mental retardation, particularly Down's syndrome?

A major study in Chile involving 55 children with Down's syndrome demonstrated significant improvement when treated with DMSO and amino acids. The study divided children into two age groups and showed

marked improvement in motor skills, language development, and cognitive function. Children under 3½ years showed particularly impressive gains, with motor index scores improving from 56 to 72 after one year of treatment.

One of the most notable success stories involved Billy King of Portland, Oregon, who was treated by Dr. Stan Jacob. Starting treatment at age 14 with the mental capacity of a 10-month-old, Billy progressed to having the mental abilities of a seven-year-old after two years of treatment. He gained the ability to speak, write his name, and identify 269 Peabody flash cards, demonstrating the potential for significant improvement in cognitive function through DMSO treatment.

26. What makes DMSO effective in treating scleroderma?

DMSO is the only effective treatment for scleroderma, a condition that calcifies body tissue and can attack internal organs. A landmark study at the Cleveland Clinic involving 43 patients demonstrated significant results. Of these patients, who had suffered from scleroderma for 1 to 25 years, 26 showed good to excellent progress after treatment periods ranging from 3 to 23 months. Three patients became symptom-free after one year of treatment, while nine others had symptoms return only after discontinuing treatment.

The treatment involves applying DMSO concentrations of 30 to 100 percent to various areas of skin or the entire body. Patients with early-stage scleroderma typically show the most dramatic improvement. Even in advanced cases where conventional medicine offers little hope, DMSO has demonstrated the ability to halt disease progression and improve quality of life, as evidenced by cases like the Santa Barbara woman who recovered from severe symptoms after consistent DMSO treatment.

27. How does DMSO help with dental and gum disease?

DMSO's effectiveness in treating periodontal disease was demonstrated in a Polish study involving 32 patients with various stages of gum disease. The treatment, using 30 percent DMSO compresses for 10 minutes every other day, showed significant improvement in all patients with superficial disease. Pain elimination, reduced bleeding, and tightening of loose teeth were observed in many cases, though very loose teeth did not respond as well.

Beyond treating existing conditions, DMSO shows promise in preventive dental care. Regular use as a mouthwash or in tooth brushing has demonstrated positive results in maintaining gum health and preventing bacterial growth. DMSO's ability to penetrate tissue and carry other medications makes it particularly effective when combined with antibiotics for treating deep gum infections.

28. What is the significance of DMSO in treating burns?

DMSO demonstrates remarkable effectiveness in treating burns, particularly when combined with aloe vera. Treatment results show faster healing, reduced pain, and minimal scarring compared to conventional treatments. A notable case involved a cook who suffered second-degree burns from hot grease; treatment with a 50% DMSO and 50% aloe vera lotion resulted in complete recovery with no scarring, and the patient returned to work within two days.

The compound's effectiveness extends to various types of burns, from thermal to sunburn. DMSO lotions can prevent blister formation when applied quickly after minor burns and provide significant pain relief. The treatment protocol typically involves multiple applications in the first few hours following the burn, with continued application over subsequent days as needed.

29. How does DMSO help with carpal tunnel syndrome?

DMSO provides multiple benefits in treating carpal tunnel syndrome by reducing inflammation without the harmful side effects of conventional anti-inflammatory drugs. Its ability to improve circulation in the affected area and reduce pain makes it particularly effective for this condition. Some patients who had unsuccessful surgical interventions have reported dramatic improvement with DMSO treatment.

The treatment typically involves topical application to the affected area, often twice daily. DMSO's anti-inflammatory properties help reduce compression on the median nerve, while its ability to improve circulation aids in healing. Many patients report immediate relief, with continued improvement over time, often avoiding the need for surgery or other invasive treatments.

30. What role does DMSO play in treating lupus?

DMSO has proven to be one of the most important treatments for lupus, providing symptom relief without the side effects associated with conventional treatments like cortisone or methotrexate. While it doesn't cure lupus, it significantly reduces symptoms and allows patients to live more normal lives. The treatment helps prevent severe episodes and can protect internal organs from damage commonly associated with lupus.

Treatment protocols often involve regular DMSO injections combined with vitamin therapy and topical application to affected joints. Many patients report dramatic improvement in their condition, with some able to maintain full-time employment and normal activities. The treatment has shown particular effectiveness in reducing pain and inflammation while helping to prevent the severe episodes characteristic of lupus.

31. How does DMSO affect digestive problems and ulcers?

Studies under Dr. Aws Salim's direction demonstrated DMSO's effectiveness in treating various digestive problems, particularly in preventing and treating stress-induced gastric mucosal injury. In a study of 177 patients, those receiving DMSO showed significantly lower rates of gastric injury compared to control groups. The compound's effectiveness as a free radical scavenger proved particularly valuable in preventing and treating duodenal ulcers.

Research involving 302 patients showed that DMSO was more effective than conventional treatments in preventing ulcer recurrence. The relapse rate for patients treated with DMSO was only 13%, compared to 65% for placebo and 30% for conventional treatment with cimetidine. These results demonstrate DMSO's superior effectiveness in both treating acute digestive problems and preventing their recurrence.

32. What is the significance of DMSO in treating ear and hearing problems?

DMSO has shown remarkable effectiveness in treating tinnitus and other ear disorders. A Chilean study presented at the New York Academy of Sciences showed that of 15 patients treated with DMSO spray combined with other medications, nine completely recovered from tinnitus with no symptom return during the following year. Four others experienced significant reduction in symptoms, while two had lower intensity of symptoms.

Treatment methods vary but often include ear drops containing 40% DMSO and topical application around the ears. The treatment not only addresses the primary ear problems but often helps with related symptoms such as headaches and insomnia. The study noted increased ear temperature after treatment, indicating improved blood flow to the inner ear, which may explain the broad range of improvements observed.

33. How does DMSO help with fibromyalgia?

DMSO has demonstrated significant effectiveness in treating fibromyalgia symptoms when conventional treatments have failed. The treatment typically involves slow-drip DMSO administration combined with oral consumption. A notable case involved a 75-year-old Los Angeles woman who showed dramatic improvement after ten weeks of treatment, experiencing significant pain reduction and improved quality of life.

The compound's effectiveness likely stems from its multiple mechanisms of action, including anti-inflammatory properties, improved circulation, and pain reduction. Patients often report immediate improvement after

treatment begins, with continued benefits through ongoing maintenance therapy. Many are able to reduce or eliminate their dependence on conventional pain medications and experience lasting relief from fibromyalgia symptoms.

34. What role does DMSO play in treating fungal infections?

DMSO has proven particularly effective in treating various fungal infections, from athlete's foot to more severe conditions like jungle rot. The compound's ability to penetrate tissue deeply makes it especially valuable in treating persistent fungal infections that resist conventional treatments. Veterans suffering from jungle rot, a particularly difficult-to-treat condition, have reported significant relief with DMSO treatment.

Treatment protocols typically involve topical application of DMSO in concentrations ranging from 50% to 90%, often combined with other anti-fungal agents. While some conditions may require ongoing maintenance treatment to prevent recurrence, many patients experience immediate relief from symptoms. DMSO has also shown effectiveness in treating nail fungus and preventing foot odor associated with fungal growth.

35. How does DMSO affect hair and scalp problems?

DMSO demonstrates effectiveness in stimulating hair growth and treating various scalp conditions. Its ability to act as a vasodilator increases blood supply to hair follicles, potentially promoting new growth. Patients who have recently lost hair typically show the best results, with the last areas that lost hair being the first to regrow. The treatment has shown particular effectiveness in helping cancer patients regrow hair more rapidly after chemotherapy.

Topical application of DMSO lotions has also proven effective in treating various scalp conditions, including infections and seepage. A notable case involved an 80-year-old Oklahoma man who avoided surgical scalping through DMSO treatment of a severe scalp infection. Regular use may also help maintain natural hair color and prevent hair loss, though results vary among individuals.

36. What makes DMSO effective in treating headaches?

DMSO's effectiveness in treating headaches stems from its ability to address both muscle spasms and blood vessel changes that often cause head pain. Treatment is particularly effective when administered during the early stages of a migraine headache, potentially reversing the condition before it fully develops. The compound works by reducing muscle tension in the neck and improving blood flow to affected areas.

Application methods typically include topical treatment to the head and neck, sometimes combined with oral consumption or injection for enhanced effectiveness. A unique case in Newport Beach demonstrated that proper dosing is crucial - while the treatment is remarkably safe, following prescribed protocols yields optimal results. Patients often report immediate relief, particularly when treatment begins at the first sign of headache symptoms.

37. How does DMSO help with various types of infections?

DMSO enhances infection treatment both independently and in combination with antibiotics. Its effectiveness stems from its ability to penetrate deeply into tissues, carrying antibiotics and other medications to infection sites that might otherwise be difficult to reach. A notable example involved a Los Angeles man with severe osteomyelitis who recovered completely when DMSO was combined with antibiotics, avoiding threatened amputation.

The compound's versatility in treating different types of infections is particularly valuable in cases where conventional antibiotic treatment alone proves insufficient. Studies suggest that combining DMSO with antibiotics can improve treatment outcomes while potentially reducing the required antibiotic dosage. This combination approach has proven especially effective in treating deep-tissue infections and antibiotic-resistant cases.

38. What is the significance of DMSO in treating inflammation?

DMSO functions as a potent anti-inflammatory agent without the harmful side effects associated with conventional treatments like steroids or NSAIDs. It works by increasing the effectiveness of cortisol, the body's natural anti-inflammatory hormone, while also providing direct anti-inflammatory effects. Dr. Aws Salim's research demonstrated its effectiveness in treating NSAID-induced gastritis, showing significant healing in cases where conventional treatments had failed.

The compound's anti-inflammatory properties extend beyond symptom relief to actually addressing underlying causes of inflammation. Studies show it can protect cells against inflammatory damage even when natural cortisol levels are reduced. This makes it particularly valuable in treating chronic inflammatory conditions where long-term use of conventional anti-inflammatory medications might pose significant risks.

39. How does DMSO help with interstitial cystitis?

DMSO gained FDA approval for treating interstitial cystitis in 1978, marking it as the first effective treatment for this condition. While traditional protocol involves catheter installation directly into the bladder, many doctors now successfully use oral administration, having patients drink DMSO in cranberry juice once or twice daily. This simpler approach often provides immediate relief while eliminating the need for frequent clinical procedures.

Both methods have shown significant success in treating this painful condition. Patients often report rapid improvement in symptoms, including reduced pain and decreased urinary frequency. The treatment's effectiveness extends beyond just symptom relief to actually addressing the underlying inflammation of the bladder lining, often providing long-term improvement rather than just temporary relief.

40. What role does DMSO play in treating shingles and herpes?

DMSO demonstrates significant effectiveness against viral infections, particularly herpes zoster (shingles) and herpes simplex. Dr. William Campbell Douglas's clinical study of 46 shingles patients showed remarkable results using DMSO concentrations ranging from 50 to 90 percent on skin lesions. The treatment proved particularly effective when started early in the disease process, often preventing the development of postherpetic neuralgia, a painful long-term complication.

The compound's effectiveness is enhanced when combined with other treatments, such as lysine, which has been proven to inhibit viral replication. Treatment protocols typically involve both topical application and oral administration, with many doctors reporting successful outcomes using this dual approach. Early intervention appears crucial for optimal results, though benefits have been observed even in established cases.

41. How does DMSO help with spinal cord injuries?

DMSO's effectiveness in treating spinal cord injuries stems from its multiple therapeutic actions, including reducing edema, improving blood flow, and protecting against free radical damage. While it cannot repair a completely severed spinal cord, it can significantly reduce secondary damage that often occurs after the initial injury due to swelling and reduced blood flow to the injured area.

The treatment typically involves intravenous slow drip administration, though it can also be given orally or applied topically to the spinal area. While immediate treatment provides optimal results, cases document

improvement even years after the initial injury. The compound's ability to cross the blood-brain barrier and carry other beneficial substances with it makes it particularly valuable in treating these complex injuries.

42. What contribution did Dr. Stanley Jacob make to DMSO research and development?

Dr. Stanley Jacob, as head of the organ transplant team at Oregon Health Sciences University, first discovered DMSO's medical potential while searching for a way to preserve transplant organs without ice crystal formation. His 1961 meeting with Robert Herschler led to the recognition of DMSO's remarkable medical properties, initiating decades of research into its therapeutic applications.

Jacob became known as the father of DMSO, dedicating his career to researching and documenting its various medical applications. His work established many of the protocols still used today, and his commitment to investigating DMSO's potential helped establish its safety and effectiveness across a wide range of medical conditions. His research laid the groundwork for modern understanding of DMSO's mechanisms of action and therapeutic applications.

43. How does DMSO's penetration ability affect its medical applications?

DMSO's unique ability to penetrate cellular membranes makes it an exceptional delivery system for other medications. This property allows it to carry various therapeutic agents deep into tissues that might otherwise be inaccessible. The compound can pass through skin and other biological barriers, including the blood-brain barrier, making it valuable in treating conditions affecting deep tissues or protected areas of the body.

This penetration ability also enhances the effectiveness of other medications when combined with DMSO. Studies show improved outcomes when antibiotics, anti-inflammatory drugs, and other medications are administered with DMSO, likely due to improved delivery to target tissues. This property has made DMSO particularly valuable in treating deep-seated infections, tumors, and various neurological conditions.

44. What is the significance of DMSO's combination with laetrile in cancer treatment?

The combination of DMSO and laetrile has shown promising results in cancer treatment since the 1970s. This combination works through a unique mechanism where laetrile becomes activated specifically at cancer sites due to the presence of beta glucuronidase enzyme, while

normal cells are protected by the rhodanese enzyme. DMSO's ability to carry the laetrile directly to cancer cells enhances this targeted approach.

Clinical results have shown significant success, particularly in cases where conventional treatments had failed. The treatment can be administered through various methods, including intravenous slow drip, intramuscular injection, or topical application directly to accessible tumors. Multiple case studies document positive outcomes, including cases involving brain cancer, prostate cancer, and other forms considered terminal by conventional standards.

45. How does DMSO concentration affect its effectiveness in different applications?

DMSO concentration plays a crucial role in treatment effectiveness and varies depending on the condition being treated and the method of administration. Topical applications typically range from 50% to 90% concentration, while oral consumption usually involves lower concentrations diluted in liquids. For eye treatments, a 40% solution has proven both safe and effective, while some skin conditions respond best to higher concentrations.

The choice of concentration must balance maximum effectiveness with patient comfort and safety. While higher concentrations might provide more rapid results in some cases, they may also cause temporary skin irritation or discomfort. Professional guidance in selecting appropriate concentrations for specific conditions helps ensure optimal outcomes while minimizing any temporary discomfort.

46. What are the long-term effects of DMSO use?

Studies and decades of clinical experience indicate that DMSO is one of the safest medical products ever used. The Vacaville prison studies demonstrated its safety even at doses 3-30 times higher than normal therapeutic levels. Long-term users, including medical professionals and researchers, have reported no adverse effects over decades of regular use. Many long-term users actually report better health outcomes than their peers who don't use DMSO.

Evidence suggests that regular DMSO use might actually extend life expectancy due to its powerful free radical scavenging properties. Users have reported maintaining better health, mental clarity, and physical capability into advanced age. The author's personal experience of using DMSO for over 49 years, along with Dr. Stanley Jacob's continued professional activity into his 90s, provides anecdotal support for its long-term safety and potential benefits.

47. How does DMSO compare to conventional treatments in terms of side effects?

DMSO demonstrates a remarkably benign side effect profile compared to conventional treatments. While traditional medications like NSAIDs and steroids often cause serious side effects including gastrointestinal bleeding, kidney problems, and immune system suppression, DMSO's only consistent side effect is a garlic-like breath odor. Even this effect is temporary and completely harmless. Some users may experience minor skin irritation with topical application, but this typically resolves quickly.

The compound's safety profile becomes particularly significant when comparing it to treatments for conditions like arthritis, where conventional medications often cause serious long-term complications. DMSO not only avoids these harmful effects but can actually help heal damage caused by other medications. This makes it particularly valuable for patients who have experienced adverse reactions to conventional treatments or who require long-term therapy.

48. What role does timing play in DMSO treatment effectiveness?

Timing proves crucial in DMSO treatment, particularly in acute conditions like stroke, brain injury, or severe trauma. While the compound can provide benefits even when treatment is delayed, immediate administration typically yields optimal results. This is particularly evident in cases of brain injury or stroke, where early treatment can prevent secondary damage and improve long-term outcomes.

However, DMSO's effectiveness isn't limited to immediate intervention. Chronic conditions have shown improvement even when treatment begins years after onset. The key factor appears to be consistency of treatment once begun, rather than just timing of initial administration. This makes DMSO valuable both in emergency medicine and in treating long-standing conditions.

49. How has DMSO research evolved since its discovery?

DMSO research has progressed from its initial discovery as an industrial solvent to recognition of its diverse medical applications. Early research focused primarily on its ability to penetrate tissue and preserve organs. However, subsequent studies revealed its effectiveness as a free radical scavenger, anti-inflammatory agent, and therapeutic delivery system. Despite a temporary setback in 1965 due to concerns about eye damage in animals, research has consistently demonstrated its safety and effectiveness in humans.

Modern research continues to uncover new applications and mechanisms of action. Recent studies, particularly in radiation protection and DNA repair, have revealed previously unknown properties and potential applications. The evolution of research has also led to better understanding of optimal concentrations, administration methods, and combination therapies for various conditions.

50. What are the economic implications of DMSO use in healthcare?

DMSO's potential economic impact on healthcare is significant, particularly in reducing treatment costs for chronic conditions and emergency care. Its ability to enhance the effectiveness of other medications while reducing their required dosages could lead to substantial cost savings. Additionally, its effectiveness in preventing complications and reducing recovery time could significantly decrease overall healthcare expenses.

The compound's versatility in treating multiple conditions with minimal side effects could potentially reduce dependency on multiple medications and their associated costs. Its use in preventive medicine could also lead to reduced long-term healthcare expenses by preventing or minimizing the progression of various conditions. However, these economic benefits remain largely unrealized due to limited implementation in mainstream medical practice.

Cellular Resurrection: How DMSO Transforms Cancer Treatment

By A Midwestern Doctor – 50 Q&As

Dimethyl sulfoxide (DMSO), a naturally occurring compound, has emerged as a potential game-changer in oncology, offering a multifaceted approach to combating cancer that challenges the entrenched paradigms of the medical establishment. As detailed in A Midwestern Doctor's comprehensive article, *Hundreds of Studies Show DMSO Transforms The Treatment of Cancer*, DMSO's unique ability to transform cancer cells, enhance immune system function, and synergize with both natural and conventional treatments presents a compelling case for its inclusion in cancer therapy protocols. This summary of AMD's recent deep dive explores the remarkable properties of DMSO, its historical suppression—echoing the predatory tactics of the allopathic cartel medicine system spearheaded by the Rockefeller clan—and its potential to revolutionize cancer care.

At the heart of DMSO's promise lies its capacity to induce cellular differentiation, a process that guides cancer cells back to a more normalized state, effectively reversing the chaotic growth that defines malignancy. This cellular transformation, documented across at least twelve different tumor types, shifts the focus from the destructive bulldozing of traditional treatments to a rehabilitative urban planning approach, as the analogy below suggests. Beyond this, DMSO enhances the immune system by increasing cancer cell visibility up to 100-fold through heightened surface antigen expression, while its low toxicity profile and ability to protect healthy cells during chemotherapy and radiation make it a versatile ally. It also offers significant pain management benefits, reducing morphine dependency in cancer patients. These properties, explored further in articles like The Magic of DMSO and Healing with DMSO, underscore its potential as a holistic treatment tool.

The suppression of DMSO's therapeutic potential is a familiar tale in the annals of medical history, where innovative treatments threaten the lucrative status quo of the pharmaceutical industry. With 65% of oncologists' revenues tied to chemotherapy drugs, the economic incentives to sidelining alternatives like DMSO are stark, a pattern reminiscent of the broader suppression of cancer treatments by the oligarchic medical system detailed in Rockefeller Medicine Men. Despite hundreds of studies affirming its efficacy, DMSO remains on the fringes

of oncology, a victim of systemic resistance that prioritizes profit over patient well-being. This introduction sets the stage for the 50 questions and answers that unpack AMD's deep dive and DMSO's role in cancer treatment, urging greater research and awareness. For deeper insights, explore resources like The DMSO Handbook for Doctors, DMSO: Nature's Healer, and A Practical Guide to DMSO, which illuminate this suppressed yet promising frontier in medical science.

With thanks to A Midwestern Doctor.

Hundreds of Studies Show DMSO Transforms The Treatment of Cancer

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Analogy

Imagine cancer as a rebellious city block where buildings (cells) have gone rogue, breaking all urban planning rules, growing wildly and chaotically, consuming resources and threatening the entire surrounding neighborhood. Traditional treatments are like sending in bulldozers to demolish everything - destructive, indiscriminate, and causing massive collateral damage.

DMSO is like a brilliant urban planner who doesn't just demolish the problematic block, but instead comes in with a revolutionary approach. This planner understands the underlying blueprint of the buildings, speaks the language of urban infrastructure, and knows how to slowly, carefully guide these rogue structures back to their original, intended design.

Just as an expert urban planner would:

- Restore zoning regulations
- Reconnect broken infrastructure
- Reestablish communication between different city sectors
- Make the rebellious block harmonize with surrounding neighborhoods

DMSO does the same at the cellular level - it doesn't just destroy cancer cells, but essentially helps them "remember" how to be normal,

productive members of the body's biological community. It rewrites their genetic code, repairs their metabolic pathways, makes them visible to the body's immune "peacekeeping forces", and transforms them from chaotic, resource-consuming rebels back into cooperative, rule-following cellular citizens.

The urban planning analogy captures DMSO's nuanced, intelligent approach to cancer treatment - not war, but rehabilitation; not destruction, but restoration.

12-point summary

1. Cellular Transformation Breakthrough DMSO represents a revolutionary approach to cancer treatment by its unique ability to fundamentally reprogram cancer cells. Unlike traditional treatments that simply destroy cancer cells, DMSO can induce differentiation, effectively guiding cancer cells back to a more normalized state. This approach addresses cancer at its cellular origin, potentially offering a more holistic and less destructive treatment strategy that transforms how we understand and approach cancer progression.

2. Immune System Enhancement The compound demonstrates an extraordinary capacity to make cancer cells more visible to the immune system, increasing surface antigen expression by up to 100-fold. This mechanism effectively breaks down the molecular camouflage that allows cancer cells to evade immune detection, essentially training the body's natural defense systems to more effectively target and eliminate cancerous cells. This immune-modulating capability represents a paradigm shift in understanding how we can leverage the body's own mechanisms to fight cancer.

3. Multifaceted Treatment Approach DMSO offers a comprehensive approach to cancer treatment that extends beyond traditional single-mechanism therapies. By simultaneously addressing cellular metabolism, genetic expression, immune system function, and cellular structure, the compound provides a multi-dimensional intervention. Its ability to reduce cancer cell growth, induce differentiation, and protect healthy cells while maintaining treatment efficacy makes it a potentially transformative tool in cancer research and treatment.

4. Remarkable Combination Potential The compound demonstrates exceptional synergy with both natural and pharmaceutical treatments, dramatically enhancing their effectiveness. Combinations with substances like ascorbic acid, laetrile, and sodium bicarbonate have shown remarkable results, with some studies demonstrating up to 86.7% success rates in treating specific cancer types. This combination

approach suggests a more nuanced, personalized approach to cancer treatment that goes beyond one-size-fits-all methodologies.

5. Systemic Research Suppression The story of DMSO reveals profound systemic challenges in medical research, where economic interests can systematically suppress potentially revolutionary treatments. With 65% of oncologists' revenues derived from chemotherapy drugs, the medical-pharmaceutical complex created significant barriers to exploring alternative approaches. This suppression highlights critical ethical questions about prioritizing economic interests over potential medical breakthroughs.

6. Cellular Protection Mechanism DMSO provides an extraordinary ability to protect healthy cells while maintaining cancer cells' vulnerability to treatment. The compound neutralizes free radicals, prevents DNA damage, and reduces inflammatory responses that typically damage healthy tissues during treatments like chemotherapy and radiation. This selective protection mechanism represents a potentially revolutionary approach to developing less toxic, more targeted cancer treatments.

7. Metabolic Intervention Strategy The compound profoundly disrupts cancer cell metabolism by systematically intervening in biochemical pathways that support abnormal cellular growth. By modifying glucose transport, insulin receptor availability, and protein synthesis mechanisms, DMSO creates an environment hostile to cancer cell proliferation while guiding cells towards a more normalized metabolic state. This approach addresses cancer at its fundamental metabolic origins.

8. Broad-Spectrum Effectiveness Research has documented DMSO's effectiveness across a remarkable range of cancer types, including blood cancers, organ-specific cancers, and various malignancies. Its consistent ability to induce differentiation, reduce cancer cell growth, and modify cellular behavior across different cancer types suggests a fundamental approach to disrupting cancer's cellular mechanisms.

9. Pain Management Potential Beyond its cancer-fighting capabilities, DMSO offers a unique approach to managing cancer-related pain by addressing pain at its cellular origins. Clinical trials have demonstrated its ability to reduce or eliminate morphine use while simultaneously improving overall patient quality of life, providing a holistic approach to cancer symptom management.

10. Minimal Toxicity Profile Unlike many cancer treatments, DMSO demonstrates remarkably low toxicity, with most side effects being mild

and temporary. Its ability to protect healthy cells while potentially modifying cancer cell behavior suggests a treatment approach that minimizes collateral damage and patient suffering.

11. Immune System Transformation DMSO doesn't just support the immune system; it fundamentally transforms how the immune system interacts with cancer cells. By increasing the visibility of cancer cells and promoting immune cell activation, the compound essentially reprograms the body's natural defense mechanisms to more effectively target and eliminate cancerous cells.

12. Future Research Potential The compound represents a frontier of medical research, with promising directions including personalized medicine approaches, advanced combination therapies, and potential applications beyond cancer treatment. Its unique ability to modify cellular behavior at multiple levels positions DMSO as a potentially transformative tool in future medical interventions.

50 Questions and Answers

Question 1: What is DMSO and how was it originally discovered?

Answer: Dimethyl sulfoxide (DMSO) is a naturally occurring compound with remarkable therapeutic potential, first gaining significant attention in the 1960s. It quickly became America's most desired drug after researchers discovered its ability to cure many seemingly incurable ailments, leading to thousands of scientific papers exploring its medical applications across numerous conditions.

The compound's potential was so compelling that by 1980, the television program 60 Minutes featured a segment highlighting DMSO's extraordinary capabilities. Despite its initial promise, the FDA ultimately took actions that effectively buried DMSO's research and medical applications, preventing it from becoming a mainstream medical treatment despite its demonstrated effectiveness in treating a wide range of conditions from strokes and pain to tissue injuries and various internal organ diseases.

Question 2: How does DMSO interact with cancer cells at a cellular level?

Answer: DMSO fundamentally transforms cancer cells by inducing differentiation, a process where cancer cells revert from their chaotic, uncontrolled state to a more normal, structured cellular configuration. At concentrations as low as 0.5-2%, DMSO consistently causes cancer cells to change their genetic expression, metabolic pathways, and structural characteristics, effectively pushing them towards a more normalized state.

This cellular transformation involves complex biochemical changes, including alterations in cellular enzymes, increased tumor suppressing genes, decreased cancer-promoting proteins, and modifications to the cell's cytoskeleton. Remarkably, DMSO achieves this differentiation across at least twelve different tumor cell types, with studies showing that concentrations of 1.5% can make these changes permanent, while higher concentrations can actually cause cancer cell death.

Question 3: What is cellular differentiation and how does DMSO contribute to this process?

Answer: Cellular differentiation is a fundamental biological process where initial undifferentiated cells progressively specialize into specific cell types with distinct functions and structures. In the context of cancer, this process is critically disrupted, with cancer cells losing their normal organizational structure and behaving in a chaotic, invasive manner. DMSO uniquely intervenes in this process by guiding cancer cells back towards a more normalized state, effectively reversing the dedifferentiation that characterizes cancerous growth.

DMSO's differentiation mechanism involves multiple complex interactions, including altering cellular membrane properties, changing cytoskeletal structures, modifying genetic expression, and influencing metabolic pathways. By inducing these changes, DMSO can transform cancer cells from a state of uncontrolled proliferation to a more structured, controlled cellular configuration, potentially halting or reversing cancer progression through a process that few other compounds have demonstrated with such consistency.

Question 4: How does DMSO potentially help in treating different types of cancer?

Answer: DMSO has demonstrated remarkable versatility in addressing various cancer types across multiple biological systems. Documented studies show its effectiveness in treating blood cancers like acute myeloid leukemia, chronic myeloid leukemia, and non-Hodgkin lymphoma, as well as organ-specific cancers including brain, breast, colon, kidney, liver, lung, prostate, and ovarian cancers. Beyond these, DMSO has also shown potential in treating less common cancers such as embryonic carcinoma and rhabdomyosarcomas.

The compound's cancer-fighting potential extends beyond mere treatment, offering multiple therapeutic mechanisms. DMSO can inhibit cancer growth, induce programmed cell death, enhance immune system recognition of cancer cells, reduce cancer cell proliferation, and even help differentiate cancer cells back to a more normal state. Its ability to work across such a diverse range of cancer types suggests a fundamental

approach to disrupting cancer's cellular mechanisms, making it a potentially transformative tool in cancer research and treatment.

Question 5: What mechanisms does DMSO use to inhibit cancer cell growth?

Answer: DMSO employs multiple sophisticated mechanisms to inhibit cancer cell growth, primarily by disrupting the cellular processes that enable uncontrolled proliferation. At the molecular level, it suppresses critical cancer-promoting genes like c-myc and ras by up to 80-90%, reduces telomerase activity (which allows cancer cells to divide indefinitely), and downregulates proteins associated with cancer spread such as AP-1. These interventions effectively interrupt the fundamental genetic signals that drive cancer cell multiplication.

Additionally, DMSO influences cancer cell growth through structural and metabolic interventions. It alters the cancer cell's cytoskeleton, changes membrane properties, modifies cellular viscosity, and shifts electrophoreic mobility. By increasing tumor suppressor proteins like HLJ1, transforming mutated p53 to a functional state, and forcing cancer cells to regain contact inhibition, DMSO essentially reprograms the cell's growth mechanisms. Studies have consistently shown these effects occur in a dose-dependent manner, with concentrations as low as 0.5% demonstrating significant growth inhibition across multiple cancer types.

Question 6: How does DMSO enhance the effectiveness of chemotherapy drugs?

Answer: DMSO acts as a powerful enhancer of chemotherapy drugs by fundamentally changing how these medications interact with cancer cells. It accomplishes this through multiple mechanisms, including dramatically improving drug penetration by breaking down the fibrin-like cytoplasmic barrier that cancer cells use to resist chemotherapy. By disrupting this barrier, DMSO allows chemotherapy drugs to enter cancer cells more effectively, sometimes reducing the required drug dosage by 44-90% while maintaining or improving treatment efficacy.

The compound's enhancement extends beyond mere drug delivery. DMSO can potentiate chemotherapy drugs' effectiveness by altering cancer cell membranes, increasing drug concentration within tumors, and making cancer cells more sensitive to treatment. Studies have shown DMSO can increase bladder cancer drug concentrations by up to 12.1 times and has demonstrated significant improvements in drug efficacy for treatments targeting breast, lung, prostate, and other cancer types. This unique ability to both protect healthy cells and enhance

chemotherapy's targeting of cancer cells makes DMSO a potentially revolutionary adjunct to conventional cancer treatments.

Question 7: What are the documented effects of DMSO on radiation therapy?

Answer: DMSO has demonstrated remarkable protective capabilities against radiation damage while simultaneously maintaining cancer cells' vulnerability to radiation. When applied prophylactically, DMSO protects healthy tissues from radiation-induced injury by neutralizing free radicals, preventing DNA damage, reducing inflammatory responses, and accelerating cellular repair mechanisms. Animal studies have shown DMSO can increase survival rates from otherwise lethal radiation exposures, with some experiments revealing up to 67% survival rates when DMSO was administered.

The compound's radiation protection extends across multiple biological systems, including protecting skin, intestinal cells, reproductive tissues, and preventing radiation-induced complications like fibrosis and senescence. Notably, DMSO selectively protects healthy cells while maintaining cancer cells' sensitivity to radiation, making it a unique and potentially transformative agent in radiation therapy. Human studies have further confirmed its effectiveness, with clinical trials showing significant reductions in radiation-related tissue damage and improved patient outcomes when DMSO is incorporated into treatment protocols.

Question 8: How does DMSO interact with the immune system in cancer treatment?

Answer: DMSO plays a critical role in enhancing the immune system's ability to recognize and eliminate cancer cells by fundamentally altering cancer cell surface characteristics. The compound increases the expression of surface antigens like H-2K and H-2D by up to 100-fold, making cancer cells far more visible and vulnerable to immune system detection. This enhancement significantly increases cancer cells' susceptibility to immune-mediated elimination, effectively breaking down the molecular camouflage that helps cancer cells evade immune surveillance.

Beyond surface antigen modification, DMSO actively stimulates immune cell activity by increasing the presence of anti-tumor macrophages, activating T-cells, and promoting the production of tumor-fighting immune molecules. A pivotal 2016 study demonstrated that DMSO-treated cancer cells, when injected into mice, induced an anti-tumor immunity that enabled complete elimination of untreated cancer cells. By potentiating immune cell responses and making cancer cells more

recognizable, DMSO offers a unique approach to leveraging the body's natural defense mechanisms against cancer.

Question 9: What natural compounds has DMSO been successfully combined with for cancer treatment?

Answer: DMSO has shown remarkable synergy with several natural compounds in cancer treatment, creating potent therapeutic combinations. Ascorbic acid (vitamin C) has demonstrated particularly promising results, with a 2022 randomized trial showing that a 30% ascorbic acid and 95% DMSO combination successfully treated 86.7% of basal cell cancers in just eight weeks, significantly outperforming conventional treatments. Other notable natural combinations include laetrile (a compound from apricot seeds), which showed dramatic improvements in terminal cancer cases when combined with DMSO.

Additional natural compounds that have shown potential when combined with DMSO include baking soda (sodium bicarbonate), which in intravenous treatments demonstrated significant improvements in metastatic prostate cancer symptoms, and haematoxylin, a pathology dye that an orthopedic surgeon discovered could be an extremely effective cancer treatment. These combinations leverage DMSO's unique ability to enhance compound penetration, modify cellular mechanisms, and improve overall treatment efficacy, offering promising alternative approaches to conventional cancer therapies.

Question 10: Why was DMSO largely suppressed in medical research?

Answer: DMSO was effectively erased from medical history primarily due to financial and regulatory challenges within the medical-pharmaceutical complex. The compound threatened existing profitable treatment paradigms, particularly in cancer care where 65% of oncologists' revenues come from chemotherapy drugs. The FDA used administrative mechanisms to stifle DMSO research, despite hundreds of studies demonstrating its remarkable therapeutic potential across multiple medical conditions. This suppression was so comprehensive that many long-time natural health enthusiasts were unaware of DMSO's existence.

The systematic marginalization of DMSO represents a broader pattern of medical research suppression, where treatments that could potentially disrupt lucrative existing therapies face significant institutional resistance. The pharmaceutical industry's economic interests, combined with regulatory obstacles, created an environment hostile to DMSO's development. Researchers who pursued DMSO faced professional challenges, with promising research lines frequently interrupted or abandoned, leaving a wealth of potential medical applications

unexplored and potentially preventing breakthrough treatments from reaching patients who could have benefited.

Question 11: What are the practical considerations for sourcing and dosing DMSO?

Answer: Sourcing high-quality DMSO requires careful consideration, with three top brands recommended: Jacob Lab (99.98% pure), The DMSO Store (99.995% pure), and Nature's Gift (99.9% pure). The preferred approach is to purchase 70% DMSO, which offers an optimal balance between safety and efficacy. When purchasing, it's crucial to choose glass containers or DMSO-resistant plastics, as standard plastics can interact negatively with the compound.

Dosing DMSO is highly individualized, with significant variation in individual tolerance. The recommended approach involves starting with lower concentrations and gradually increasing. For topical applications, begin with 30-50% DMSO, carefully monitoring skin reactions. Oral dosing typically starts with a teaspoon of 70% DMSO mixed in water, with careful attention to individual tolerance. Patch testing is essential, especially for those with sensitive skin, to prevent adverse reactions and ensure safe usage.

Question 12: How does DMSO protect healthy cells during cancer treatments?

Answer: DMSO provides a unique protective mechanism for healthy cells during cancer treatments by selectively shielding normal tissues while maintaining cancer cells' vulnerability to therapeutic interventions. Its molecular structure allows it to neutralize free radicals, prevent DNA damage, and reduce inflammatory responses that typically damage healthy cells during treatments like chemotherapy and radiation. Unlike traditional protective agents, DMSO does not compromise the effectiveness of cancer treatments.

The compound's protective capabilities extend to multiple biological systems, including preventing radiation-induced tissue damage, reducing chemotherapy toxicity, and supporting cellular repair mechanisms. Studies have demonstrated DMSO's ability to protect healthy cells from radiation exposure, reduce oxidative stress, and even rescue cells trapped in a damaged state. This selective protection makes DMSO a potentially revolutionary adjunct to cancer treatments, offering a way to mitigate the devastating side effects of conventional therapies while maintaining their therapeutic efficacy.

Question 13: What is the role of DMSO in pain management for cancer patients?

Answer: DMSO offers a unique approach to managing cancer-related pain through its multifaceted interaction with cellular mechanisms and nervous system responses. The compound has demonstrated remarkable effectiveness in treating intractable cancer pain, with studies showing significant pain reduction even in cases where conventional pain management strategies have failed. Its ability to address pain stems from its capacity to modify membrane hyper-excitability and suppress ion fluxes associated with central pain sensitization.

Clinical trials have documented DMSO's pain management potential, including a study where 26 patients with advanced cancer experiencing significant pain were treated with DMSO and sodium bicarbonate. The treatment not only reduced pain to the point where patients could discontinue morphine but also improved overall quality of life and mitigated chemotherapy symptoms. This approach goes beyond traditional pain management, addressing the underlying cellular mechanisms that contribute to chronic cancer-related pain.

Question 14: How does DMSO address extravasation injuries from chemotherapy?

Answer: Extravasation injuries occur when chemotherapy drugs leak from veins into surrounding tissues, potentially causing severe damage and tissue necrosis. DMSO has emerged as a highly effective treatment for these challenging complications, with studies showing it can prevent or heal injuries that would otherwise result in significant tissue damage. The compound's unique ability to penetrate tissues and promote healing has made it the most commonly described therapy for small drug extravasations.

Multiple clinical studies have demonstrated DMSO's effectiveness, including a 1995 study that treated 144 patients with various chemotherapy extravasations. Of these patients, only one developed an ulceration, and none experienced significant side effects beyond temporary skin irritation. A 2004 study found that using 99% DMSO reduced ulceration rates from 28% to just 1-2%, highlighting its potential to dramatically improve patient outcomes in these critical situations.

Question 15: What are the potential mechanisms of DMSO in cancer cell differentiation?

Answer: DMSO induces cancer cell differentiation through a complex series of biochemical and structural modifications that fundamentally transform cancer cells' behavior. At the cellular level, it alters genetic expression, modifies metabolic pathways, and restructures the cellular

cytoskeleton, effectively guiding cancer cells from a chaotic, uncontrolled state to a more normalized configuration. This process involves changes in multiple cellular components, including increased tumor suppressor genes, decreased cancer-promoting proteins, and modifications to cellular enzymes and signaling mechanisms.

The differentiation process is dose-dependent, with concentrations as low as 0.5-2% consistently showing the ability to transform cancer cells. At 1.5% concentration, these changes can become permanent, with higher concentrations potentially causing cancer cell death. DMSO's mechanism involves altering cellular membrane properties, changing intercellular calcium levels, modifying protein expressions, and influencing key metabolic pathways that regulate cell growth and behavior.

Question 16: What evidence exists for DMSO's effectiveness in treating specific cancer types?

Answer: Extensive research has documented DMSO's effectiveness across a wide range of cancer types, spanning blood cancers, organ-specific cancers, and other malignancies. Blood cancers have shown particularly promising results, with DMSO demonstrating efficacy in treating acute myeloid leukemia, chronic myeloid leukemia, non-Hodgkin lymphoma, and T-cell leukemia. Organ-specific cancers including brain, breast, colon, kidney, liver, lung, prostate, and ovarian cancers have also exhibited significant responses to DMSO treatment.

Studies have consistently shown DMSO's ability to inhibit cancer growth, induce cell differentiation, and reduce proliferation across these cancer types. For instance, research has documented DMSO's capacity to reduce cancer cell growth by up to 88.94% in melanoma, differentiate cancer cells in brain tumors, and significantly slow progression in prostate cancer. The compound's versatility is particularly noteworthy, with documented effectiveness observed in less common cancers such as embryonic carcinoma and rhabdomyosarcomas.

Question 17: How does DMSO interact with the blood-brain barrier?

Answer: DMSO demonstrates a unique ability to penetrate the blood-brain barrier, a notoriously challenging obstacle in cancer treatment that typically prevents many drugs from reaching brain tumors. The compound can concentrate inside tumors, with studies showing up to a 1.5-fold increase in brain tumor concentrations. This property makes DMSO particularly valuable for potentially treating brain cancers that are typically difficult to access with conventional treatments.

While some studies have shown mixed results regarding drug transportation across the blood-brain barrier, DMSO's ability to modify

cellular membranes and enhance drug penetration remains a significant area of research. Researchers have explored using DMSO to improve the delivery of chemotherapy drugs to brain tumors, potentially allowing for lower, less toxic drug doses while maintaining therapeutic effectiveness. This characteristic positions DMSO as a potentially revolutionary tool in addressing one of the most challenging aspects of cancer treatment.

Question 18: What are the documented side effects or risks of using DMSO?

Answer: DMSO is generally considered to have remarkably low toxicity, with most side effects being mild and temporary. The most common reactions include a temporary skin irritation, a distinctive breath odor, and occasional mild stinging sensations when applied topically. The compound's ability to penetrate cell membranes means users must be cautious about applying it to clean skin, avoiding potential contamination that could be inadvertently carried into the body.

Clinical studies have consistently shown minimal adverse effects, with most patients tolerating DMSO well across various applications. The key considerations involve individual tolerance, proper dosing, and careful application. A small risk of allergic reaction exists (approximately 1 in 2,000), making patch testing recommended before widespread use. The compound's unique ability to protect healthy cells while maintaining treatment efficacy suggests that its potential benefits often outweigh the minimal risks associated with its use.

Question 19: How does DMSO potentially help in treating skin cancers?

Answer: DMSO has demonstrated significant promise in treating skin cancers through multiple mechanisms, particularly when combined with other compounds. A notable 2022 randomized trial showed remarkable efficacy when DMSO was combined with ascorbic acid, successfully treating 86.7% of basal cell cancers in just eight weeks. This approach outperformed conventional treatments like imiquimod, with fewer side effects and better cosmetic outcomes. The combination approach leverages DMSO's ability to enhance drug penetration and modify cellular mechanisms.

Photodynamic therapy studies have further highlighted DMSO's potential in skin cancer treatment. Research showed that combining DMSO with 5-ALA (5-aminolevulinic acid) could eliminate up to 85.4% of basal cell carcinomas and 100% of superficial squamous cell carcinomas. These studies demonstrated DMSO's ability to improve drug penetration, increase cellular sensitivity, and enhance the overall

effectiveness of skin cancer treatments, offering a promising alternative to more invasive approaches.

Question 20: What are the ethical considerations in DMSO cancer research?

Answer: The DMSO research narrative reveals profound ethical challenges in medical research, particularly how economic interests can suppress potentially transformative treatments. The systematic marginalization of DMSO represents a critical ethical failure in medical research, where treatments that could potentially disrupt lucrative existing therapies face significant institutional resistance. With 65% of oncologists' revenues coming from chemotherapy drugs, the financial incentives create substantial barriers to exploring alternative approaches.

The suppression of DMSO research highlights broader systemic issues in medical science, including the potential prioritization of economic interests over patient outcomes. Researchers pursuing DMSO faced professional challenges, with promising research lines frequently interrupted or abandoned. This approach potentially prevented breakthrough treatments from reaching patients who could have benefited, raising serious questions about the medical establishment's commitment to genuine scientific exploration and patient care.

Question 21: How does DMSO enhance the delivery of chemotherapy drugs?

Answer: DMSO revolutionizes chemotherapy drug delivery by breaking down the protective barriers that cancer cells use to resist treatment. It effectively penetrates the fibrin-like cytoplasmic barrier that cancer cells create, allowing chemotherapy drugs to enter more efficiently. This mechanism can dramatically reduce the required drug dosage while maintaining or even improving treatment efficacy, with some studies showing drug concentration increases of up to 12.1 times in targeted tissues.

The compound's unique molecular properties enable it to modify cell membranes, increase drug penetration, and concentrate treatments within tumor sites. By altering the cytoskeleton and membrane permeability of cancer cells, DMSO creates a more accessible pathway for chemotherapy drugs. This approach not only improves drug delivery but also potentially reduces the systemic toxicity associated with high-dose chemotherapy, offering a more targeted and less invasive treatment strategy.

Question 22: What role does DMSO play in addressing cancer cell resistance?

Answer: DMSO confronts cancer cell resistance through multiple sophisticated mechanisms that disrupt the cellular strategies cancer uses to evade treatment. By altering the cancer cell's cytoskeleton, changing membrane properties, and modifying genetic expression, DMSO effectively breaks down the molecular defenses that enable cancer cells to resist conventional therapies. Studies have shown its ability to suppress critical resistance-associated genes like c-myc and ras by up to 80-90%, fundamentally undermining the cancer cell's survival mechanisms.

The compound's approach to overcoming resistance extends beyond genetic intervention. DMSO can modify cellular metabolism, increase tumor suppressor protein activity, and force cancer cells to regain normal growth patterns. This multifaceted approach makes it particularly effective against treatment-resistant cancer types, offering a potential breakthrough in addressing one of the most challenging aspects of cancer treatment. By essentially reprogramming cancer cell behavior, DMSO provides a novel approach to circumventing traditional drug resistance mechanisms.

Question 23: How does DMSO potentially help in treating multiple myeloma?

Answer: DMSO offers a promising approach to addressing multiple myeloma through its unique ability to prevent and eliminate amyloid protein deposits, a critical challenge in this blood cancer. Over 40 studies have demonstrated DMSO's capacity to prevent amyloid proteins from clumping together and effectively remove these deposits from the body. This mechanism is particularly significant for multiple myeloma, where amyloid proteins are present in 10-15% of cases and can cause severe complications.

Clinical case reports have documented remarkable outcomes, including a 2000 case study where a patient with previously undiagnosed multiple myeloma experienced significant improvement through a combination of chemotherapy and oral DMSO. The treatment resulted in marked reduction of plasma cells in bone marrow, decreased M-protein levels, and improvement of overall symptoms. These findings suggest DMSO's potential not just as a supportive treatment, but as a potentially transformative approach to managing multiple myeloma and its associated complications.

Question 24: What is the relationship between DMSO and pleomorphic bacteria in cancer?

Answer: A fascinating aspect of DMSO research explores its potential interactions with pleomorphic bacteria, microorganisms that can change shape and potentially contribute to cancer development. A 1967 Russian study isolated these bacteria from cancer patients' blood and tumors, revealing a complex relationship between microbial presence and cancer progression. DMSO demonstrated a remarkable ability to inhibit these bacterial forms, potentially offering a novel approach to understanding cancer's underlying mechanisms.

The study found that DMSO was significantly more effective than other agents in addressing these pleomorphic bacteria, completely inhibiting their motion in leukemic blood samples without damaging red blood cells. This discovery suggests a potential additional mechanism by which DMSO might combat cancer - by targeting microorganisms that may play a role in cancer development. The ability to eliminate these hard-to-detect bacteria could represent a unique approach to cancer treatment that goes beyond traditional cellular interventions.

Question 25: How does DMSO impact the immune system's response to cancer?

Answer: DMSO dramatically enhances the immune system's ability to recognize and eliminate cancer cells by fundamentally transforming how cancer cells interact with immune mechanisms. The compound increases the expression of surface antigens like H-2K and H-2D by up to 100-fold, effectively making cancer cells far more visible to the immune system. This enhanced visibility breaks down the molecular camouflage that typically allows cancer cells to evade immune detection, making them much more vulnerable to targeted elimination.

A pivotal 2016 study demonstrated DMSO's profound immune-modulating capabilities, showing that DMSO-treated cancer cells could induce an anti-tumor immunity capable of completely eliminating untreated cancer cells. The compound actively stimulates immune cell activity by increasing anti-tumor macrophages, activating T-cells, and promoting the production of tumor-fighting immune molecules. This multifaceted approach transforms the immune system from a passive observer to an active participant in cancer elimination.

Question 26: What are the limitations of current research on DMSO and cancer?

Answer: Despite numerous promising studies, DMSO research faces significant limitations primarily driven by institutional and economic barriers in the medical research ecosystem. The systematic suppression of DMSO research by regulatory bodies, particularly the FDA, has prevented comprehensive, large-scale clinical trials that could

definitively establish its therapeutic potential. Many promising research lines were interrupted or abandoned, leaving substantial gaps in understanding DMSO's full capabilities in cancer treatment.

The existing research, while extensive, remains fragmented across various cancer types and approaches. Most studies are limited in scale, often focusing on specific cancer cell lines or animal models, which makes broad generalization challenging. The economic disincentives in the pharmaceutical industry, where DMSO could potentially disrupt lucrative existing treatments, have further constrained thorough investigation. These limitations mean that while the existing research is highly promising, there remains a significant need for comprehensive, well-funded research to fully understand DMSO's potential.

Question 27: How does DMSO potentially help in treating brain cancers?

Answer: DMSO demonstrates unique potential in brain cancer treatment through its ability to penetrate the notoriously challenging blood-brain barrier, a critical obstacle in treating neurological malignancies. The compound can concentrate inside brain tumors, with studies showing up to a 1.5-fold increase in tumor concentrations. This characteristic makes DMSO particularly valuable for potentially delivering treatments to brain cancers that are typically inaccessible with conventional approaches.

Researchers have explored using DMSO to enhance chemotherapy drug delivery to brain tumors, potentially allowing for lower, less toxic drug doses while maintaining therapeutic effectiveness. Its ability to modify cellular membranes and improve drug penetration offers a promising avenue for addressing one of the most challenging aspects of brain cancer treatment. While research is still ongoing, the compound's unique properties suggest it could be a transformative tool in developing more effective, less invasive brain cancer therapies.

Question 28: What are the most promising combination therapies involving DMSO?

Answer: DMSO has demonstrated remarkable synergy with multiple natural and pharmaceutical compounds, creating potent therapeutic combinations that enhance cancer treatment efficacy. The combination of ascorbic acid (vitamin C) and DMSO stands out, with a 2022 randomized trial showing an 86.7% success rate in treating basal cell cancers in just eight weeks. Other notable combinations include laetrile, which showed dramatic improvements in terminal cancer cases, and sodium bicarbonate, which demonstrated significant symptom improvements in metastatic prostate cancer patients.

Natural compound combinations have been particularly promising, with treatments involving baking soda, haematoxylin, and other substances showing unique potential when combined with DMSO. The compound's ability to enhance drug penetration, modify cellular mechanisms, and improve overall treatment efficacy makes it an invaluable tool in developing more targeted, less toxic cancer treatments. These combination approaches leverage DMSO's unique properties to potentially create more effective, holistic cancer therapies that address multiple aspects of disease progression.

Question 29: How does DMSO impact cellular metabolism in cancer cells?

Answer: DMSO profoundly influences cancer cell metabolism through a complex series of biochemical interventions that fundamentally alter cellular energy production and metabolic pathways. The compound modifies key metabolic processes, including reducing glucose transport, altering insulin receptor availability, and changing protein synthesis mechanisms. These interventions effectively disrupt the abnormal metabolic patterns that allow cancer cells to proliferate and survive, pushing them towards a more normalized cellular state.

The metabolic changes induced by DMSO are comprehensive, affecting multiple cellular enzymes and signaling molecules. Studies have documented modifications in pathways like JAK-STAT, ERK, and NF-kB, with increases in crucial enzymes such as Protein Kinase C and changes in mitochondrial energy production. By essentially reprogramming the metabolic machinery of cancer cells, DMSO offers a unique approach to interrupting cancer cell growth and potentially reversing the metabolic adaptations that enable cancer progression.

Question 30: How does DMSO potentially prevent cancer metastasis?

Answer: DMSO demonstrates significant potential in preventing cancer metastasis by fundamentally altering the cellular mechanisms that enable cancer spread. The compound reduces cancer cells' metastatic potential by modifying surface antigen expressions, particularly increasing class I antigens that allow immune system recognition. Studies have shown DMSO can significantly decrease the metastatic potential of lung cancer cells, effectively making them more vulnerable to immune system elimination.

The compound's ability to modify cellular structures, particularly the cytoskeleton and membrane properties, creates barriers to cancer cell migration and invasion. By increasing cellular differentiation, reducing cancer cell mobility, and enhancing immune system targeting, DMSO provides a multi-dimensional approach to preventing cancer spread.

Research has consistently demonstrated its capacity to make cancer cells less aggressive, reduce their ability to form new tumor sites, and create a cellular environment less conducive to metastatic progression.

Question 31: How does DMSO interact with genetic expression in cancer cells?

Answer: DMSO profoundly influences genetic expression in cancer cells by triggering comprehensive molecular reprogramming that reverses aberrant genetic patterns. The compound systematically suppresses cancer-promoting genes like c-myc and ras by up to 80-90%, while simultaneously upregulating tumor suppressor genes such as P21, PTEN, and RB. This genetic intervention effectively disrupts the molecular mechanisms that drive uncontrolled cell proliferation and cancer progression.

The genetic modifications induced by DMSO extend beyond simple gene suppression, involving complex changes in cellular signaling pathways and epigenetic mechanisms. By altering histone phosphorylation, modifying key cellular enzymes, and changing protein expressions, DMSO essentially rewrites the genetic instructions that govern cancer cell behavior. These changes can be permanent at certain concentrations, suggesting a potentially transformative approach to genetically reprogramming cancerous cells back to a normalized state.

Question 32: What is the potential of DMSO in photodynamic therapy?

Answer: Photodynamic therapy combines DMSO with light-activated compounds to create a powerful cancer treatment approach, particularly effective in skin cancer management. Studies have demonstrated remarkable success rates, with one trial showing the elimination of 85.4% of basal cell carcinomas and 100% of superficial squamous cell carcinomas when DMSO was combined with 5-ALA (5-aminolevulinic acid) and activated by specific light wavelengths.

The compound's unique ability to enhance drug penetration and cellular sensitivity makes it an ideal partner in photodynamic treatments. Research has shown that DMSO can double the production of light-activated therapeutic compounds and significantly improve treatment penetration depth. Long-term follow-up studies have been particularly promising, with one investigation revealing that 91% of treated skin cancers did not recur after six years, offering a potentially less invasive alternative to traditional surgical interventions.

Question 33: How does DMSO affect cellular membrane dynamics?

Answer: DMSO fundamentally transforms cellular membrane properties through multiple sophisticated mechanisms, altering the

physical and chemical characteristics of cell membranes. The compound shifts the membrane transition temperature, increases membrane fluidity, and modifies lipid content, creating a more dynamic and responsive cellular environment. Studies have documented changes such as increasing negatively charged phospholipid content and reducing neutral lipid content, which enhances the cell's overall membrane functionality.

These membrane modifications have profound implications for cellular behavior, particularly in cancer cells. By changing membrane zeta potential and improving phospholipid exposure, DMSO essentially reprograms how cells interact with their surrounding environment. The compound's ability to alter membrane characteristics without destroying cellular integrity makes it a unique tool for potentially reversing abnormal cellular behaviors associated with cancer and other disease states.

Question 34: How does DMSO reduce oxidative stress?

Answer: DMSO demonstrates exceptional capabilities in neutralizing oxidative stress through its powerful free radical scavenging mechanisms. The compound effectively neutralizes charged ions, forms protective radicals, and prevents the formation of harmful reactive oxygen species that can damage cellular components. Its molecular structure allows it to directly interact with and neutralize free radicals, protecting cellular DNA, proteins, and mitochondrial membranes from oxidative damage.

The oxidative stress reduction occurs through multiple biochemical pathways, including direct radical neutralization and supporting cellular repair mechanisms. Studies have shown DMSO can protect cells from radiation-induced oxidative damage, reduce inflammatory responses, and support mitochondrial energy production. This multifaceted approach to managing oxidative stress positions DMSO as a potentially revolutionary compound in addressing cellular damage associated with cancer, radiation, and other oxidative stress-inducing conditions.

Question 35: How does DMSO potentially help in managing cancer pain?

Answer: DMSO offers a unique approach to cancer pain management by addressing pain at its cellular origins rather than simply masking symptoms. The compound works by modifying membrane hyper-excitability, suppressing ion fluxes associated with pain sensitization, and addressing the underlying cellular mechanisms that generate chronic pain. Clinical trials have demonstrated remarkable effectiveness,

with studies showing patients can reduce or eliminate morphine use while simultaneously improving overall quality of life.

A pivotal study involving 26 patients with advanced cancer revealed that DMSO, when combined with sodium bicarbonate, not only significantly reduced pain but also mitigated chemotherapy symptoms. The treatment's ability to address pain holistically, rather than simply blocking pain signals, represents a revolutionary approach to cancer pain management. By targeting the cellular mechanisms of pain generation, DMSO offers a more comprehensive and potentially less toxic alternative to traditional pain management strategies.

Question 36: What are the challenges in implementing DMSO as a cancer treatment?

Answer: The implementation of DMSO as a cancer treatment faces significant institutional and economic barriers that extend beyond scientific considerations. The primary challenge stems from the pharmaceutical industry's economic structure, where 65% of oncologists' revenues derive from chemotherapy drugs. This financial ecosystem creates powerful disincentives for exploring alternative treatments that could potentially disrupt existing profitable treatment paradigms.

Regulatory challenges, particularly from the FDA, have systematically suppressed DMSO research, interrupting promising research lines and preventing comprehensive clinical trials. The compound's potential to enhance existing treatments while reducing toxicity threatens the current medical-industrial complex, resulting in institutional resistance. These challenges have effectively prevented a comprehensive, well-funded exploration of DMSO's full potential, leaving a promising treatment marginalized despite extensive preliminary research demonstrating its remarkable capabilities.

Question 37: How does DMSO interact with different chemotherapy drugs?

Answer: DMSO demonstrates remarkable versatility in interacting with various chemotherapy drugs, enhancing their efficacy while simultaneously reducing their toxicity. The compound can increase drug penetration, modify cellular membranes, and concentrate treatments within tumor sites, potentially allowing for lower, less toxic drug doses. Studies have shown DMSO can increase drug concentrations in targeted tissues by up to 12.1 times, with some chemotherapy drugs requiring dramatically reduced doses when combined with DMSO.

Different chemotherapy drugs exhibit varied interactions with DMSO, with some showing particularly promising results. Cisplatin studies, for instance, have demonstrated DMSO's ability to reduce kidney toxicity

while maintaining or even improving cancer-fighting effectiveness. The compound has shown positive interactions with drugs like cyclophosphamide, 5-fluorouracil, and doxorubicin, consistently offering the potential to make chemotherapy more targeted and less systemically damaging.

Question 38: What is the role of DMSO in cellular protection mechanisms?

Answer: DMSO provides extraordinary cellular protection through its unique ability to shield healthy cells while maintaining cancer cells' vulnerability to therapeutic interventions. The compound neutralizes free radicals, prevents DNA damage, and reduces inflammatory responses that typically damage healthy tissues during treatments like chemotherapy and radiation. Unlike traditional protective agents, DMSO selectively protects normal cells without compromising the effectiveness of cancer treatments.

The protection extends across multiple biological systems, including preventing radiation-induced tissue damage, reducing chemotherapy toxicity, and supporting cellular repair mechanisms. Studies have demonstrated DMSO's capacity to rescue cells trapped in damaged states, support mitochondrial function, and accelerate healing processes. This selective protection mechanism makes DMSO a potentially revolutionary compound in developing less toxic, more targeted cancer treatments that minimize collateral damage to healthy tissues.

Question 39: How does DMSO potentially influence cancer cell metabolism?

Answer: DMSO profoundly disrupts cancer cell metabolism by systematically intervening in multiple biochemical pathways that support abnormal cellular growth. The compound reduces critical metabolic processes like glucose transport, alters insulin receptor availability, and modifies protein synthesis mechanisms. By essentially reprogramming the metabolic machinery, DMSO creates an environment that is hostile to cancer cell proliferation while pushing cells towards a more normalized metabolic state.

The metabolic interventions are comprehensive, affecting crucial signaling pathways like JAK-STAT, ERK, and NF-kB, and modifying key cellular enzymes including Protein Kinase C. Studies have documented DMSO's ability to change mitochondrial energy production, alter cellular enzyme activities, and fundamentally reshape how cancer cells generate and utilize energy. This multi-dimensional approach to metabolic modification offers a unique strategy for interrupting cancer progression at its most fundamental cellular level.

Question 40: What are the most significant animal and human studies on DMSO and cancer?

Answer: Animal studies have consistently demonstrated DMSO's remarkable potential in cancer treatment across multiple biological systems. Rodent studies have shown significant cancer growth inhibition, with experiments revealing increased survival rates, reduced tumor progression, and enhanced immune system responses. A particularly notable 2016 study demonstrated that DMSO-treated cancer cells could induce an anti-tumor immunity capable of eliminating untreated cancer cells in mice, highlighting the compound's profound immunomodulatory capabilities.

Human studies, though more limited, have also provided compelling evidence of DMSO's potential. A 1992 controlled trial involving 198 colon cancer patients showed significant improvements in five-year survival rates when DMSO was administered after surgery. Another study involving 26 patients with advanced cancer demonstrated remarkable pain reduction and improved quality of life. While these studies are preliminary, they suggest DMSO's potential as a complementary approach to conventional cancer treatments, offering hope for more targeted, less toxic therapeutic strategies.

Question 41: How does DMSO potentially help in treating skin cancers?

Answer: DMSO has demonstrated remarkable potential in skin cancer treatment, particularly through combination therapies that enhance drug penetration and cellular sensitivity. A groundbreaking 2022 randomized trial showcased its effectiveness when combined with ascorbic acid, successfully treating 86.7% of basal cell cancers in just eight weeks. This approach significantly outperformed conventional treatments like imiquimod, with fewer side effects and superior cosmetic outcomes.

Photodynamic therapy studies have further highlighted DMSO's promise, with research showing that combining DMSO with 5-ALA (5-aminolevulinic acid) could eliminate up to 85.4% of basal cell carcinomas and 100% of superficial squamous cell carcinomas. Long-term follow-up studies revealed impressive results, with 91% of treated skin cancers showing no recurrence after six years. These findings position DMSO as a potentially revolutionary approach to skin cancer treatment, offering a less invasive and more targeted alternative to traditional surgical interventions.

Question 42: What is the relationship between DMSO and cellular energy production?

Answer: DMSO plays a critical role in cellular energy production by supporting mitochondrial function and protecting cellular energy-generating mechanisms. Studies have shown the compound can increase mitochondrial energy production and help cells continue generating energy even after their function has been compromised. This unique ability is particularly significant in cancer treatment, where mitochondrial dysfunction is often associated with disease progression.

The compound's impact on cellular energy extends beyond simple mitochondrial support. DMSO modifies metabolic pathways, alters cellular enzyme activities, and helps rescue cells trapped in energy-depleted states. Research has documented its capacity to reduce inflammatory processes that interfere with energy production, support cellular repair mechanisms, and potentially reverse some of the metabolic adaptations that enable cancer cell survival. This multifaceted approach to supporting cellular energy makes DMSO a potentially transformative tool in addressing cellular metabolic challenges.

Question 43: How does DMSO potentially enhance the immune system's cancer-fighting capabilities?

Answer: DMSO dramatically transforms the immune system's ability to recognize and eliminate cancer cells by fundamentally altering how cancer cells interact with immune mechanisms. The compound increases the expression of surface antigens like H-2K and H-2D by up to 100-fold, effectively making cancer cells far more visible to the immune system. This enhanced visibility breaks down the molecular camouflage that typically allows cancer cells to evade immune detection, making them significantly more vulnerable to targeted elimination.

A pivotal 2016 study demonstrated DMSO's profound immune-modulating capabilities, showing that DMSO-treated cancer cells could induce an anti-tumor immunity capable of completely eliminating untreated cancer cells. The compound actively stimulates immune cell activity by increasing anti-tumor macrophages, activating T-cells, and promoting the production of tumor-fighting immune molecules. This comprehensive approach transforms the immune system from a passive observer to an active participant in cancer elimination, offering a potentially revolutionary approach to cancer immunotherapy.

Question 44: What are the potential long-term effects of DMSO treatment?

Answer: The long-term effects of DMSO treatment represent a complex and not fully explored area of medical research. Existing studies suggest

remarkably low toxicity, with most side effects being mild and temporary, including occasional skin irritation, a distinctive breath odor, and mild stinging sensations when applied topically. The compound's ability to protect healthy cells while potentially modifying cancer cell behavior suggests promising long-term therapeutic potential.

However, the systematic suppression of DMSO research has limited comprehensive long-term studies. Available research indicates potential benefits in cellular repair, immune system modulation, and cancer cell differentiation. Some studies suggest DMSO could have lasting positive effects on cellular metabolism, genetic expression, and immune system function. The compound's ability to address underlying cellular mechanisms rather than simply treating symptoms suggests it might offer more sustainable long-term health benefits compared to traditional cancer treatments.

Question 45: How does DMSO interact with different cancer cell types?

Answer: DMSO demonstrates remarkable versatility in interacting with diverse cancer cell types, consistently showing an ability to induce differentiation and inhibit growth across multiple malignancies. Research has documented its effectiveness in blood cancers like acute myeloid leukemia, chronic myeloid leukemia, and non-Hodgkin lymphoma, as well as organ-specific cancers including brain, breast, colon, kidney, liver, lung, prostate, and ovarian cancers. The compound's mechanism of action remains remarkably consistent across these varied cancer types.

The interaction mechanism involves fundamental cellular reprogramming, including altering genetic expression, modifying metabolic pathways, and restructuring cellular architecture. Studies have shown DMSO can reduce cancer cell growth by up to 88.94% in melanoma, differentiate cancer cells in brain tumors, and significantly slow progression in prostate cancer. This consistent ability to intervene in different cancer cell types suggests a fundamental approach to disrupting cancer's cellular mechanisms, making DMSO a potentially transformative tool in cancer research.

Question 46: What are the regulatory challenges surrounding DMSO research?

Answer: The regulatory landscape for DMSO research has been characterized by significant institutional barriers and economic disincentives. The FDA effectively suppressed DMSO research through administrative mechanisms, despite hundreds of studies demonstrating its remarkable therapeutic potential. With 65% of oncologists' revenues derived from chemotherapy drugs, the medical-pharmaceutical complex

created an environment hostile to exploring alternative treatments that could potentially disrupt existing profitable treatment paradigms.

Researchers pursuing DMSO faced substantial professional challenges, with promising research lines frequently interrupted or abandoned. The systematic marginalization of the compound represents a broader pattern of medical research suppression, where treatments threatening established economic interests struggle to gain institutional recognition. These regulatory challenges have prevented comprehensive clinical trials and comprehensive exploration of DMSO's full potential, leaving a wealth of promising medical applications unexplored and potentially preventing breakthrough treatments from reaching patients who could benefit.

Question 47: How does DMSO potentially prevent cancer recurrence?

Answer: DMSO offers a multifaceted approach to potentially preventing cancer recurrence by addressing fundamental cellular mechanisms that enable cancer progression. The compound's ability to induce cancer cell differentiation, modify genetic expression, and enhance immune system recognition creates multiple barriers to cancer resurgence. By forcing cancer cells to revert to a more normalized state and increasing their visibility to the immune system, DMSO interrupts the molecular processes that typically allow cancer to re-emerge.

Studies have demonstrated DMSO's capacity to modify cancer cell metabolism, reduce cancer-promoting genetic expressions, and create a cellular environment less conducive to tumor growth. Its ability to enhance immune system targeting and reduce cancer cell mobility suggests a comprehensive strategy for preventing cancer recurrence. Long-term studies, particularly those combining DMSO with other treatments, have shown promising results in reducing the likelihood of cancer returning, offering hope for more sustainable cancer management approaches.

Question 48: What are the most promising future research directions for DMSO?

Answer: The most promising future research directions for DMSO center on its potential to revolutionize cancer treatment through combination therapies and targeted cellular interventions. Researchers are particularly interested in exploring DMSO's ability to enhance chemotherapy effectiveness, reduce treatment toxicity, and provide novel approaches to cancer cell differentiation. Potential research avenues include investigating its interactions with immunotherapy, developing more targeted delivery mechanisms, and exploring its potential in treating drug-resistant cancer types.

Emerging research focuses on understanding DMSO's molecular mechanisms more deeply, particularly its ability to modify cellular metabolism, genetic expression, and immune system interactions. Promising directions include exploring its potential in personalized medicine approaches, developing more sophisticated combination therapies, and investigating its applications beyond cancer treatment. The compound's unique ability to protect healthy cells while targeting cancer cells positions it as a potentially transformative tool in developing less toxic, more targeted therapeutic strategies.

Question 49: How does DMSO compare to other alternative cancer treatments?

Answer: DMSO distinguishes itself from other alternative cancer treatments through its scientifically documented mechanisms of action and remarkable cellular interactions. Unlike many alternative treatments that lack rigorous scientific backing, DMSO has hundreds of peer-reviewed studies demonstrating its potential to modify cancer cell behavior fundamentally. Its ability to induce cancer cell differentiation, enhance immune system recognition, and provide cellular protection sets it apart from many less substantiated alternative approaches.

The compound's versatility is particularly noteworthy, with documented effectiveness across multiple cancer types and treatment approaches. Unlike some alternative treatments that rely on anecdotal evidence, DMSO offers a biochemically explainable mechanism of action. Its ability to potentiate both conventional and natural treatments, coupled with its low toxicity and broad-spectrum potential, positions it as a uniquely promising alternative cancer treatment. Comparative studies suggest DMSO may offer more comprehensive and scientifically grounded benefits than many other alternative cancer therapies.

Question 50: What are the ethical considerations in DMSO cancer research?

Answer: The ethical landscape of DMSO cancer research reveals profound challenges in medical research prioritization, where economic interests can systematically suppress potentially transformative treatments. The suppression of DMSO research represents a critical ethical failure, demonstrating how financial incentives within the medical-pharmaceutical complex can obstruct scientific exploration of promising medical interventions. With 65% of oncologists' revenues coming from chemotherapy drugs, the economic ecosystem creates substantial barriers to exploring alternative approaches.

These ethical challenges extend beyond economic considerations to fundamental questions about medical research priorities and patient

care. The systematic marginalization of DMSO research highlights systemic issues that prioritize profitable treatments over potentially more effective, less toxic alternatives. Researchers pursuing DMSO faced significant professional challenges, with promising research lines frequently interrupted or abandoned. This approach potentially prevented breakthrough treatments from reaching patients who could have benefited, raising serious questions about the medical establishment's commitment to genuine scientific exploration and patient-centered care.

Appendix A: Conditions Index

Find your condition below, then go directly to the relevant sections. Each entry lists the book section and question number(s) where that condition is discussed in detail.

Section Key:

- **MK** — The Master Key: DMSO Combination Therapies (AMD, 50 Q&As)
- **PG** — The DMSO Handbook: A Practical Guide (AMD, 50 Q&As + practical guides)
- **NH** — DMSO Nature's Healer (Dr Morton Walker, 35 Q&As)
- **HW** — Healing with DMSO (Amandha Dawn Vollmer, 44 Q&As)
- **MG** — The Magic of DMSO (klimer, reader experiences)
- **HD** — The DMSO Handbook for Doctors (Archie H. Scott, 50 Q&As)
- **CR** — Cellular Resurrection: DMSO and Cancer (AMD, 50 Q&As)

A

ADHD — NH Q16 (conditions list)

Alzheimer's disease — NH Q16 (conditions list); HD Q13

ALS (Amyotrophic Lateral Sclerosis) — NH Q16 (conditions list)

Amyloidosis — NH Q16 (conditions list); PG Q6 (neurological applications)

Antibiotic-resistant infections — MK Q20, Q21, Q22; PG Infections guide; HD Q37

Anxiety disorders — NH Q16 (conditions list)

Arthritis — MK Q13 (Pennsaid/diclofenac), Q14 (steroid combinations), Q16 (rheumatoid); NH Q5, Q16 (conditions list); HW Q16; HD Q7

Autoimmune conditions (general) — MK Q35, Q43; PG Q10; HD Q17 (multiple sclerosis)

B

Back pain — MG (Back and Knee Pain section); PG Chronic Pain guide; HD Q18

Bladder cancer — MK Q27; CR Q23

Blood clots / thrombophlebitis — MK Q11, Q12 (DMSO-heparin); NH Q16 (conditions list)

Brain cancer — CR Q27, Q17

Brain injuries (traumatic) — PG Q8; NH Q7, Q16 (conditions list); HD Q6, Q20

Burns — PG Q13, Burns guide; NH Q24; HW Q15; HD Q28

C

Cancer (general/complementary treatment) — MK Q26, Q27, Q28; NH Q8, Q16 (conditions list); HD Q8; CR all 50 Q&As (dedicated section)

Cancer cell differentiation — CR Q3, Q15, Q31

Cancer cell resistance — CR Q22, Q45

Cancer metastasis prevention — CR Q30

Cancer pain — CR Q13, Q35

Cancer recurrence prevention — CR Q47

Carpal tunnel syndrome — HD Q29

Cataracts — MK Q29, Q30; PG Q14, Eye Conditions guide

Cherry angioma — MG (Cherry Angioma section)

Chemotherapy enhancement — MK Q26, Q27; CR Q6, Q21, Q28, Q37

Chemotherapy extravasation injuries — CR Q14

Chronic pain — MK Q13 (Pennsaid), Q33-Q35 (neural therapy), Q37 (ambroxol); PG Q7, Chronic Pain guide; NH Q12; HW Q12; HD Q18

Circulatory disorders — PG Q6; NH Q16 (conditions list); MG (Vascular Circulation section)

Cirrhosis of the liver — HD Q21

Cognitive impairment / dementia — NH Q16 (conditions list); HD Q13

Concussions — NH Q16 (conditions list); PG Q8

Creutzfeldt-Jakob disease — NH Q16 (conditions list)

Cystic fibrosis — NH Q16 (conditions list)

D

Dental conditions — PG Dental Uses guide; NH Q35; HW Q18; HD Q27

Developmental disabilities — NH Q16 (conditions list)

Diabetic circulatory impairments — NH Q16 (conditions list); HD Q22

Diabetic ulcers — NH Q16 (conditions list)

Digestive problems / ulcers — HD Q31

Down syndrome — PG Q11; NH Q9, Q16 (conditions list); HD Q25

Dyscalculia — NH Q16 (conditions list)

Dyslexia — NH Q16 (conditions list)

E

Ear conditions / hearing problems — MK Q32 (ear drops/tinnitus); HD Q32

Epilepsy — NH Q16 (conditions list)

Eye conditions (general) — MK Q29, Q30; PG Q14, Eye Conditions guide; NH Q20; HD Q23

Eye conditions — cataracts — MK Q29, Q30; PG Eye Conditions guide

Eye conditions — glaucoma — MK Q29; PG Eye Conditions guide

Eye conditions — macular degeneration — MK Q29, Q30; PG Q14, Eye Conditions guide

Eye conditions — night vision — MK Q31

Eye conditions — retinitis pigmentosa — PG Eye Conditions guide

F

Fibromyalgia — HD Q33

Frostbite — NH Q16 (conditions list)

Fungal infections — MK Q24, Q25; HD Q34

G

Gout — MG (Gout section)

H

Hair and scalp problems — MG (Silky Coat/Hair section); HD Q35

Headaches / migraines — HW Q17; HD Q36

Heart attacks — NH Q16 (conditions list)

Herpes / herpes zoster — MK Q18; NH Q18; HD Q40

High blood pressure — NH Q16 (conditions list)

I

Infections (general) — MK Q20-Q23; PG Infections guide; NH Q34; HW Q31; HD Q37

Infections — deep tissue / osteomyelitis — MK Q22

Infections — fungal — MK Q24, Q25; HD Q34

Infections — lung / respiratory — MK Q23; NH Q17; HD Q19

Infections — tuberculosis — MK Q21

Infections — urinary tract — MK Q20

Inflammation (general) — HW Q13; HD Q38

Interstitial cystitis — PG Q21 (FDA approval); NH Q14; HD Q39

K

Knee pain — MG (Back and Knee Pain section); PG Chronic Pain guide

L

Learning disabilities — NH Q16 (conditions list)

Leukemia — CR Q4, Q45

Liver conditions — HD Q21

Lung infections — MK Q23; HD Q19

Lupus — HD Q30

Lyme disease — MK Q38

Lymphoma — CR Q4, Q45

M

Machado-Joseph disease — NH Q16 (conditions list)

Melanoma — CR Q19, Q41, Q45

Mental health conditions (general) — HW Q19; HD Q15

Multiple myeloma — CR Q23

Multiple sclerosis — NH Q16 (conditions list); HD Q17

Musculoskeletal injuries — PG Top Five Uses, Q7, Q9; NH Q6; HD Q14

N

Nephrogenic diabetes insipidus — NH Q16 (conditions list)

Neural therapy / nerve dysfunction — MK Q33, Q34, Q35

Neurological conditions (general) — PG Q6; NH Q16 (conditions list), Q26; HD Q6

Niemann-Pick disease — NH Q16 (conditions list)

O

Osteomyelitis — MK Q22

P

Pain management (general) — MK Q13, Q33-Q35, Q37; PG Q7, Chronic Pain guide; NH Q12; HW Q12; HD Q18

Parkinson's disease — NH Q16 (conditions list)

Periodontal disease — PG Dental Uses guide

Peripheral neuropathy — NH Q16 (conditions list)

Photodynamic therapy (cancer) — CR Q32

Prostate cancer — CR Q4, Q45

Protein misfolding diseases — NH Q16 (conditions list)

Psychiatric conditions / schizophrenia — NH Q16 (conditions list); HD Q15

R

Radiation damage / protection — HD Q9; CR Q7

Raynaud's syndrome — NH Q16 (conditions list)

Respiratory conditions — MK Q23; NH Q17; HD Q19

Rheumatoid arthritis — MK Q16

S

Scars (problematic / interference fields) — MK Q34

Schizophrenia — NH Q16 (conditions list); HD Q15

Scleroderma — MK Q43; PG Q12; NH Q13; HD Q26

Shingles — MK Q18; NH Q18; HD Q40

Skin cancer — CR Q19, Q41

Skin conditions (general) — MK Q15, Q17 (5-fluorouracil); NH Q27; HD Q16

Spinal cord injuries — PG Q8; NH Q7, Q16 (conditions list); HD Q41

Sports injuries — PG Q9; NH Q6; HD Q14

Stroke — MK Q42; PG Q8; NH Q16 (conditions list); HD Q12, Q20

T

Tendonitis — MG (Tendonitis section)

Tinnitus — MK Q32

Tuberculosis — MK Q21

V

Varicose veins — NH Q16 (conditions list); MG (Vascular Circulation section)

Vestibular problems / TIAs — MG (Vestibular Problems section)

W

Wound healing — NH Q24; HW Q14

Practical Topics Index

These topics are covered outside the Q&A sections, primarily in the practical guides within The DMSO Handbook: A Practical Guide.

Buying DMSO / sourcing — PG Buying DMSO guide; MK Q39; MG (DMSO Sources section); CR Q11

Combination therapies (overview) — MK Q1-Q5 (general principles); MK Q11-Q38 (specific combinations)

Concentrations by body area — MK Q9; HW Q25, Q26, Q39; PG How to Dilute guide

Contraindications — HW Q22

Dilution methods — PG How to Dilute guide; MK Q40; HW Q26, Q39

Drug interactions — MK Q5, Q6; NH Q15; HW Q40, Q41, Q42

Materials compatibility (storage/application) — MK Q7; HW Q24

Oral dosing — MK Q10

Patch testing — MK Q8

Pet / veterinary use — PG Pets guide; NH Q21; HW Q34, Q35, Q36

Pregnancy and children — HW Q23

Safety profile — MK Q4; PG Q3, Q4; HD Q10, Q46

Side effects — PG Q4; NH Q10; HW Q20, Q28; CR Q18

Sterilisation and filtration — MK Q41

Topical application instructions — PG Chronic Pain guide (specific instructions)

Regulatory and Historical Topics

Crown Zellerbach — PG Q17

FDA restrictions / regulatory history — MK Q45, Q48; PG Q18-Q35; NH Q4; HW Q8, Q9, Q10; HD Q24; CR Q10, Q46

Herschler, Robert — PG Q46

Jacob, Stanley — MK Q44; PG Q44; HD Q42

Kelsey, Frances — PG Q47

Legal status by country — MK Q48, Q49; NH Q16; HW Q11; HD Q24

McGrady, Pat — PG Q48

Research methodology challenges — PG Q37, Q43

de la Torre, Jack — PG Q45

Appendix B: Quick-Reference Dosage and Concentration Guide

This appendix consolidates the concentration, dosage, and preparation information scattered across the book's six source texts into a single reference. All figures are drawn from the clinical literature and practitioner protocols described in the main text. This is not medical advice — it is a summary of what the sources report.

Topical Concentrations by Body Area

Body Area	Recommended Range	Starting Point	Notes
Face	25–35%	30%	Some experienced users work up to 50%. Most sensitive area.
Arms, torso, neck	40–70%	50%	Standard starting concentration for most applications.
Legs and feet	50–80%	70%	Less sensitive skin tolerates higher concentrations.
Wounds	40–60%	40%	Match concentration to wound sensitivity.
Warts, boils	Up to 75%	60%	Stubborn conditions may require stronger applications.
Sensitive skin (any area)	30%	30%	Regardless of body location, start here if skin is reactive.

General rule: Start lower, build tolerance gradually. Repeated application of full-strength (99.995%) DMSO can cause skin thickening and peeling.

Mucous Membrane and Specialised Concentrations

Application	Concentration	Preparation Notes
Eye drops	3% (standard)	Dilute in isotonic 0.9% saline. Mix 3 mL DMSO into 97 mL saline. Concentrations as low as 0.5% show benefit. Above 3–4% causes burning. Must be sterile.
Eye drops (upper range)	Up to 15%	Only with established tolerance. Some practitioners use up to 40%, though the standard protocol is 3%.
Mouthwash	5–15%	Swish and spit. Effective for bleeding gums, toothache, oral hygiene.
Ear drops	15–40%	For tinnitus and ear conditions.
Nose drops	15–40%	Same range as ear applications.
Other internal/mucosal	As low as 10%	High tissue permeability means lower concentrations are effective.

Oral Dosing

Parameter	Guideline
Maximum concentration in glass	20% or less (always heavily diluted)
Starting dose	1–2 teaspoons of 70% or 100% DMSO in 8 oz water
If starting dose causes discomfort	Reduce to ½ teaspoon or ¼ teaspoon, build gradually
Therapeutic range	Up to 6 teaspoons (~18 mL) twice daily
Maximum per glass	3 teaspoons — beyond this, divide doses through the day
Weight-based dosing	0.05–0.1 g/kg/day (≈ 2.5 teaspoons for a 70 kg person)

Parameter	Guideline
Emergency dosing	Up to 2 g/kg — requires medical supervision
Timing	Take after eating a meal to reduce GI irritation
Rest days	Avoid taking 1–2 days per week to prevent tolerance
Taste	Mix with juice to improve palatability

Topical Application Frequency

Situation	Frequency	Maximum Daily Amount
Acute conditions	2–4 times daily	~2 tablespoons (½ oz) topically
Burns (initial treatment)	Every 2–3 hours	Apply liberally — speed is critical
Chronic conditions	1–2 times daily	Adjust based on response
Long-term maintenance	Daily with periodic breaks	1 day off per month; 1 week off after 6 months

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Burns Protocol

Burns represent DMSO's most time-sensitive application. Effectiveness depends heavily on speed.

Step	Detail
Concentration	70–90%
Method	Soak gauze pad in DMSO and place on burn, or apply liquid directly with natural hair paintbrush
Initial frequency	Every 2–3 hours
Expected response	Pain typically stops within minutes of application. Prevents blistering when applied quickly.

Step	Detail
Key principle	The sooner after injury, the better the outcome. Within 30 minutes is ideal.

A study of 1,371 patients with skin disorders including 173 with second or third-degree burns reported a 95.04% complete recovery rate with no scarring using DMSO spray.

Eye Drop Preparation (Standard Protocol)

Step	Detail
Base solution	0.9% isotonic saline (sterile)
DMSO concentration	3%
Recipe	3 mL DMSO + 97 mL sterile 0.9% saline
Application	2–8 drops per eye, daily
Acute conditions	Higher end of drop range
Maintenance	1 drop per day
Storage	Sterilised glass container. Use micro-filtration to prevent bacterial contamination.
Expected sensation	Temporary stinging for 30–40 seconds, then subsides

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Common Dilution Recipes

Starting from commonly available DMSO concentrations:

Target Concentration	From 70% DMSO	From 100% DMSO
50%	5 parts 70% DMSO + 2 parts distilled water	1 part DMSO + 1 part distilled water
35%	Equal parts 70% DMSO + distilled water	1 part DMSO + ~2 parts distilled water
33%	—	1 part DMSO + 2 parts distilled water

Dilution rules:

- Always use distilled or purified water. Tap water may contain impurities that DMSO will transport into the body.
- DMSO generates heat when mixed with water. This is normal and does not affect safety or efficacy.
- Store diluted DMSO in glass containers with DMSO-resistant caps.
- Label containers with concentration and date.

Materials Compatibility

Material	Safe?	Notes
Glass	Yes	Always preferred for storage.
HDPE plastic	Yes	Does not react with DMSO.
Polyethylene	Yes	DMSO-resistant.
PTFE / Teflon	Yes	DMSO-resistant.
Polycarbonate	No	Leaches harmful compounds.
Polystyrene	No	Leaches harmful compounds.
Polyvinyl chloride (PVC)	No	Leaches harmful compounds.
Styrene-acrylonitrile	No	Leaches harmful compounds.

Leaching risk is concentration-dependent: minimal below 20%, generally safe below 55% for long-term storage. For medical applications, glass is non-negotiable.

Drug Interactions — Cautions

Substance	Risk Level	Detail
Alcohol	High	DMSO significantly potentiates alcohol. Extreme intoxication reported in clinical trials. Worst when DMSO taken 1 hour before drinking.
Barbiturates	High	Dangerous potentiation documented.

Substance	Risk Level	Detail
Benzodiazepines	Presumed high	Not thoroughly studied, but expected to behave similarly to barbiturates.
Fluoroquinolone antibiotics	Moderate	~4 in 10,000 patients experienced significant adverse reactions including circulatory problems and severe dizziness. Most severe of the antibiotic interactions.
Sulfonamide antibiotics	Moderate	Same incidence rate as fluoroquinolones.
Macrolide antibiotics	Moderate	Same incidence rate as fluoroquinolones.
Anticoagulants (IV with DMSO)	Caution	Serious illness reported with IV combinations — may be route-dependent rather than drug-dependent.
Steroids (IV with DMSO)	Caution	Same caveat as anticoagulants. Topical steroid-DMSO combinations are well-studied and generally beneficial.
Gadolinium contrast agents	Avoid	Risk of enhanced toxicity.

General principle: DMSO potentiates most substances it contacts. This is therapeutically useful (it's why combination therapies work) but means any concurrent medication should be evaluated for interaction risk. When in doubt, separate DMSO application and medication by several hours.

Patch Testing Protocol (First-Time Users)

Step	Detail
Location	Small, inconspicuous area of skin
Concentration	30–50%
Duration	Leave for 24 hours unless irritation develops sooner
Normal responses	Mild itching, tingling, some redness

Step	Detail
Stop immediately if	Significant swelling, severe burning, signs of allergic reaction
Allergy incidence	Approximately 1 in 1,000–2,000 people
After successful test	Proceed with intended application, starting at lower concentrations and building up

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Application Method Summary

Method	Best For	Key Detail
Topical — liquid	Most conditions, burns, skin issues	Apply with natural hair paintbrush or clean fingertip. Clean skin thoroughly first.
Topical — gel	Joint pain, localised inflammation	Rub into affected area. Gel form may be less irritating.
Eye drops	Cataracts, macular degeneration, glaucoma, general vision	3% in isotonic saline. Sterile preparation essential.
Mouthwash	Dental pain, gum disease, oral hygiene	5–15% solution. Swish and spit.
Ear drops	Tinnitus, ear conditions	15–40%.
Oral	Systemic conditions, autoimmune, internal organ support	Dilute to ≤20% in water or juice. Take after meals.
Intravenous	Emergency stroke treatment, severe acute conditions	Medical supervision required. Weight-based dosing.

All concentrations and dosages in this appendix are compiled from the source texts summarised in this book. Individual responses vary. Patch test before first use. Consult a practitioner for serious or acute conditions.

Appendix C: Glossary

Terms, acronyms, and key substances referenced throughout this book.

Compounds and Medications

5-Fluorouracil (5-FU) — A chemotherapy drug used to treat skin cancers and warts. When combined with DMSO, it penetrates more effectively into target tissue, potentially improving outcomes while reducing the amount needed.

Acetylglutamine — An amino acid derivative used in some DMSO combination protocols for cancer treatment. Part of the Chilean study cocktail (with DMSO, cyclophosphamide, GABA, and GABOB) that cured 57 of 65 patients with incurable cancers.

Ambroxol — A mucolytic drug (breaks up mucus) used in Europe for respiratory conditions. Combines with DMSO for chronic pain protocols, particularly in German clinical practice.

Cyclophosphamide — A chemotherapy and immunosuppressant drug. When mixed with DMSO at low doses, it showed dramatic efficacy in the 1975 Chilean cancer study.

Diclofenac — A non-steroidal anti-inflammatory drug (NSAID). Combined with DMSO in the commercial product Pennsaid for topical pain relief.

DMSO (Dimethyl Sulfoxide) — A naturally occurring organic compound with the chemical formula $(CH_3)_2SO$. Derived from lignin in trees as a byproduct of paper manufacturing. First synthesised in 1866. Penetrates biological membranes, transports other substances through skin and tissue, and possesses anti-inflammatory, analgesic, and antimicrobial properties.

Doxorubicin — A chemotherapy drug. Studies showed DMSO at just 5% concentration produced a 7- to 12-fold increase in doxorubicin concentration at tumour sites while reducing the required dose by 44%.

GABA (Gamma-Aminobutyric Acid) — A naturally occurring amino acid that functions as a neurotransmitter. Used in the Chilean cancer combination protocol with DMSO.

GABOB (Gamma-Amino-Beta-Hydroxybutyric Acid) — A GABA derivative used in the Chilean cancer combination protocol alongside DMSO, cyclophosphamide, GABA, and acetylglutamine.

Hematoxylin — A natural dye extracted from logwood trees. Used in some experimental DMSO cancer protocols, particularly in photodynamic therapy approaches.

Heparin — An anticoagulant (blood thinner). Combined with DMSO in the commercial product Dolobene for treating blood clots, bruising, and inflammatory conditions.

IDU (Idoxuridine) — An antiviral drug. DMSO-IDU combinations have been used to treat herpes and shingles topically, allowing the antiviral to penetrate to the nerve where the virus resides.

Ivermectin — An antiparasitic drug with documented anti-cancer properties. Can be ground and mixed with DMSO for topical cancer protocols.

Laetrile — A controversial compound derived from apricot kernels, used in some alternative cancer protocols. DMSO has been combined with laetrile to enhance its delivery.

Lidocaine — A local anaesthetic. Used with DMSO in neural therapy protocols as an alternative to procaine.

MSM (Methylsulfonylmethane) — A metabolite of DMSO. The body converts DMSO to MSM after absorption. MSM appears in the blood 48 hours after DMSO use and remains detectable for up to 400 hours. Also available as a standalone supplement.

Procaine — A local anaesthetic central to neural therapy. When combined with DMSO, it can be applied topically rather than injected, treating interference fields and nerve dysfunction without needles.

tPA (Tissue Plasminogen Activator) — The standard drug used for acute ischemic stroke treatment. Studies show only 13% of patients significantly benefit from tPA, compared to 63% who improved with DMSO in a 2002 clinical trial.

Commercial Products

Dolobene — A European topical gel combining DMSO with heparin and dexpanthenol. Widely available in Germany and other European countries for treating bruising, blood clots, and musculoskeletal inflammation.

Pennsaid — An FDA-approved topical solution combining DMSO with diclofenac for osteoarthritis knee pain. One of the few commercially available DMSO-containing medications in the United States.

RIMSO-50 — A 50% sterile DMSO solution approved by the FDA for intravesical (bladder instillation) treatment of interstitial cystitis. The only FDA-approved DMSO product for a specific medical indication.

Medical and Scientific Terms

Amphiphilic — Having both water-attracting and fat-attracting properties. DMSO's amphiphilic nature allows it to dissolve both water-soluble and oil-soluble substances, enabling it to cross biological membranes that block most other compounds.

Amyloidosis — A group of diseases caused by abnormal protein deposits (amyloid) in organs and tissues. DMSO has demonstrated the ability to dissolve amyloid aggregates and facilitate their elimination from the body.

Blood-brain barrier — A highly selective membrane separating circulating blood from brain tissue. Most drugs cannot cross it. DMSO is one of the few substances that penetrates this barrier, enabling it to carry therapeutic agents directly to brain tissue.

Bradford Hill criteria — A set of nine principles used to establish evidence of a causal relationship between a presumed cause and an observed effect. Referenced in the book in the context of establishing DMSO's causal role in therapeutic outcomes.

Cellular differentiation — The process by which a less specialised cell becomes a more specialised cell type. In cancer treatment, DMSO has been shown to induce differentiation in cancer cells, effectively guiding them back toward normal function rather than destroying them.

Cryopreservation — The preservation of biological material by cooling to very low temperatures. DMSO is widely used as a cryoprotectant in stem cell banking and organ transplant preservation — one of its earliest discovered applications.

Extravasation — The leakage of a drug from a vein into surrounding tissue during intravenous administration. DMSO is used to treat extravasation injuries from chemotherapy drugs, reducing tissue damage.

Free radical — An unstable molecule with unpaired electrons that damages cells through oxidation. DMSO is described in the literature as one of the most powerful free radical scavengers known, neutralising these molecules before they cause cellular damage.

Interference field — A concept from neural therapy. A dysfunctional area of tissue (often a scar) that disrupts the autonomic nervous system

and causes chronic symptoms elsewhere in the body. DMSO-procaine combinations can reset these fields.

Interstitial cystitis — A chronic bladder condition causing pain and urinary urgency. The only FDA-approved indication for DMSO (as RIMSO-50). Treatment involves direct bladder instillation.

Ischemic — Relating to restricted blood supply. An ischemic stroke occurs when a blood clot blocks blood flow to the brain. DMSO has shown effectiveness in treating both ischemic and hemorrhagic strokes.

Isotonic — Having the same salt concentration as body fluids (0.9% sodium chloride for saline). DMSO eye drops are prepared in isotonic saline to match the eye's natural environment and minimise irritation.

Neural therapy — A German medical approach that treats chronic illness by identifying and correcting interference fields — typically scars or areas of tissue dysfunction that disrupt the autonomic nervous system. DMSO dramatically enhances neural therapy by allowing local anaesthetics to be applied topically rather than injected.

Photodynamic therapy — A cancer treatment combining a light-sensitive compound with targeted light exposure to destroy cancer cells. DMSO enhances this approach by improving the delivery and penetration of the photosensitising agent.

Pleomorphic — Referring to organisms that can change form. Some researchers believe pleomorphic bacteria play a role in triggering autoimmune and chronic diseases. DMSO's ability to inhibit these organisms may partly explain its effectiveness against autoimmune conditions.

Potentiate — To increase the effect of a drug or substance. DMSO potentiates most substances it contacts, which is therapeutically valuable (lower doses become effective) but requires caution with concurrent medications.

Reperfusion injury — Tissue damage that occurs when blood supply returns to tissue after a period of ischemia. The returning blood triggers inflammation and oxidative damage. DMSO protects against reperfusion injury, making it valuable in stroke and heart attack treatment.

Scleroderma — An autoimmune condition causing hardening and tightening of skin and connective tissue. One of the conditions with the strongest evidence for DMSO treatment, with studies showing 96.6% disease stabilisation and significant clinical recovery.

Systemic — Affecting the entire body rather than a single area. DMSO's ability to turn topical applications into systemic treatments — reaching

all tissues within 30 minutes of skin application — is one of its defining properties.

Vasodilator — A substance that widens blood vessels, increasing blood flow. DMSO's vasodilating properties improve circulation to injured or diseased tissue, enhancing the body's ability to deliver nutrients and remove waste products.

Materials

HDPE (High-Density Polyethylene) — A DMSO-resistant plastic safe for use when glass containers are unavailable.

PTFE (Polytetrafluoroethylene / Teflon) — A DMSO-resistant material safe for container caps, tubing, and other equipment that contacts DMSO.

Regulatory and Historical Terms

FDA (Food and Drug Administration) — The United States federal agency responsible for drug approval and regulation. Central to the DMSO story as the agency that effectively blocked research and restricted access despite extensive safety and efficacy data.

IND (Investigational New Drug) — An application that allows a drug to be shipped across state lines for clinical trials. The FDA's IND requirements became a mechanism for restricting DMSO research.

Kefauver-Harris Amendment (1962) — A US federal law requiring drug manufacturers to prove both safety and efficacy before approval. Passed in response to the thalidomide crisis, it changed the regulatory landscape just as DMSO was emerging as a therapeutic agent and became a tool for restricting its development.

NDA (New Drug Application) — The formal request to the FDA for approval to market a new drug. The NDA process for DMSO was repeatedly obstructed.

Key Figures

Fischer, Hartmut — German researcher who led the development of DMSO combination protocols, particularly in the German DMSO community. Central figure in advancing practical applications of DMSO combinations.

Herschler, Robert J. — Chemist at Crown Zellerbach who discovered DMSO's ability to transport substances through skin during a lab

accident involving dyes. Co-discoverer (with Jacob) of DMSO's medical potential.

Jacob, Dr Stanley — Head of the organ transplant team at Oregon Health Sciences University. Pioneer of DMSO medical research from 1961 onward. Spent decades advocating for DMSO's therapeutic potential against regulatory resistance.

Kelsey, Frances — FDA medical officer known for blocking thalidomide approval in the US. Her elevated status within the FDA following the thalidomide crisis influenced the regulatory environment that DMSO entered.

de la Torre, Dr Jack — Researcher who advanced DMSO's applications in stroke and neurological injury treatment, producing key clinical evidence for its effectiveness in acute brain conditions.

Walker, Dr Morton — Author of *DMSO Nature's Healer* (1993), one of the foundational popular texts on DMSO covering its discovery, properties, and regulatory suppression.

Scott, Archie H. — Author of *The DMSO Handbook for Doctors*, focused on clinical applications including emergency medicine, neurological uses, and legal considerations.

Vollmer, Amandha Dawn — Author of *Healing with DMSO*, a practical guide emphasising preparation methods, safety protocols, and therapeutic applications.

Appendix D: Bibliography and Further Reading

Primary Sources Summarised in This Book

The six source texts that form the basis of this compilation, listed in the order they appear.

A Midwestern Doctor (AMD). Multi-part DMSO series, *The Forgotten Side of Medicine* Substack, 2024–2025. Approximately 90,000 words across ten articles. Three sections of this book draw from AMD's work: *The Master Key* (combination therapies), *The DMSO Handbook: A Practical Guide* (clinical overview), and *Cellular Resurrection* (cancer applications). The full series was collated by Dr Robert Yoho.

Individual articles in the AMD DMSO series:

1. "How DMSO Treats 'Incurable' Autoimmune and Contractile Disorders" — https://www.midwesterndoctor.com/p/how-dmso-treats-incurable-autoimmune
2. "DMSO Could Save Millions From Brain and Spinal Injury" — https://www.midwesterndoctor.com/p/dmso-could-save-millions-from-brain
3. "How DMSO Cures Eye, Ear, Nose, Throat and Dental Disease"
4. "The Remarkable History and Safety of DMSO" — https://www.midwesterndoctor.com/p/the-remarkable-history-and-safety
5. "DMSO is a Miraculous Therapy for Chronic Pain and Musculoskeletal Injuries" — https://www.midwesterndoctor.com/p/dmso-is-a-miraculous-therapy-for
6. "How DMSO Protects and Heals the Internal Organs" — https://www.midwesterndoctor.com/p/how-dmso-protects-and-heals-the-internal
7. "DMSO Revolutionizes Skin Care and Dermatology" — https://www.midwesterndoctor.com/p/dmso-revolutionizes-skin-care-and
8. "The FDA's War Against DMSO and America" — https://www.midwesterndoctor.com/p/the-fdas-war-against-dmso-and-america

9. "DMSO Transforms The Treatment of Infectious Diseases" — https://www.midwesterndoctor.com/p/dmso-transforms-the-treatment-of
10. "Therapeutic DMSO Combinations Revolutionize Medicine" — https://www.midwesterndoctor.com/p/therapeutic-dmso-combinations-revolutionize
11. "Hundreds of Studies Show DMSO Transforms The Treatment of Cancer" — https://www.midwesterndoctor.com/p/hundreds-of-studies-show-dmso-transforms

Walker, Dr Morton. *DMSO Nature's Healer*. Avery Publishing, 1993. The foundational popular text on DMSO, covering discovery, therapeutic properties, the FDA controversy, and clinical applications across dozens of conditions.

Vollmer, Amandha Dawn. *Healing with DMSO: The Complete Guide to Safe and Natural Treatments for Managing Pain, Inflammation, and Other Chronic Ailments with Dimethyl Sulfoxide*. Ulysses Press, 2020. A practical guide focused on preparation, safety, dilution, and therapeutic applications.

Scott, Archie H. *The DMSO Handbook for Doctors*. CreateSpace, 2013. Written for clinicians, covering emergency medicine, neurological applications, cancer treatment enhancement, and the legal/regulatory landscape.

klimer. "The Magic of DMSO." Originally published on *Eclectic Healing* Substack, republished on *Unbekoming*. A first-person account of personal DMSO use across multiple conditions including vestibular problems, gout, back and knee pain, varicose veins, tendonitis, and hair/coat improvement in pets.

Unbekoming DMSO Series

The original Substack posts from which this book was compiled:

- "The Master Key: How DMSO Combination Therapies Are Revolutionizing Medicine" — https://unbekoming.substack.com/p/the-master-key-how-dmso-combination
- "The DMSO Handbook: A Practical Guide to its Uses and Applications" — https://unbekoming.substack.com/p/the-dmso-handbook-a-practical-guide
- "DMSO Nature's Healer" — https://unbekoming.substack.com/p/dmso-natures-healer

- "Healing with DMSO" — https://unbekoming.substack.com/p/healing-with-dmso
- "The Magic of DMSO" — https://unbekoming.substack.com/p/the-magic-of-dmso
- "The DMSO Handbook for Doctors" — https://unbekoming.substack.com/p/the-dmso-handbook-for-doctors
- "Cellular Resurrection: How DMSO Transforms Cancer Treatment" — https://unbekoming.substack.com/p/cellular-resurrection-how-dmso-transforms

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Related Substacks

A Midwestern Doctor. *The Forgotten Side of Medicine.* https://www.midwesterndoctor.com/

Dr Robert Yoho. *Surviving Healthcare.* https://robertyoho.substack.com/ — Collated and indexed the AMD DMSO series.

klimer. *Eclectic Healing*. https://eclectichealing.substack.com/

DMSO Suppliers Referenced in This Book

The following suppliers are mentioned by name across the source texts. Inclusion here reflects what the sources report, not a personal endorsement.

- **DMSOstore.com** — 99.995% purity pharmaceutical-grade DMSO. Multiple formats and concentrations.
- **Jacob Lab** — 99.98% purity. Founded by the family of Dr Stanley Jacob. Available at jacoblab.com.
- **Nature's Gift** — 99.9% purity. Rose-scented 70% DMSO/30% aloe vera cream and other formulations.

Further Reading

Books and resources referenced in the source texts or relevant to the subject matter:

Sircus, Dr Mark. *Transdermal Magnesium Therapy: A New Modality for the Maintenance of Health.* 2011. Referenced in the context of magnesium-DMSO combination protocols.

Related Unbekoming book summaries:

- "Rockefeller Medicine Men" — https://unbekoming.substack.com/p/rockefeller-medicine-men (on the historical suppression of medical alternatives)
- "The MD Emperor Has No Clothes" — https://unbekoming.substack.com/p/the-md-emperor-has-no-clothes (on oncology economics and the 65% revenue figure)
- "Cancer Is a Fungus" — https://unbekoming.substack.com/p/cancer-is-a-fungus-a-revolution-in
- "Cancer: The Forbidden Cures" — https://unbekoming.substack.com/p/cancer-the-forbidden-cures
- "Vitamin C" — https://unbekoming.substack.com/p/vitamin-c
- "Interview with Karen Brennan, PhD" — https://unbekoming.substack.com/p/interview-with-karen-brennan-phd

Unbekoming libraries:

- Book Summary Library — https://unbekoming.substack.com/p/unbekoming-book-summary-library
- Interview Library — https://unbekoming.substack.com/p/unbekoming-interview-library

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A Note on the Research Base

The source texts collectively reference a body of between 50,000 and 100,000 published studies on DMSO's medical and chemical properties. Individual studies cited within the Q&A sections include work from the United States, Russia, Germany, Chile, Poland, Bulgaria, and other countries, spanning from the 1960s to the 2020s. Key clinical trials referenced include:

- The 1975 Chilean study: 65 patients with incurable cancers treated with DMSO-cyclophosphamide-GABA-GABOB-acetylglutamine combination. 57 cured.
- The 2002 stroke trial: DMSO administered within 12 hours of onset. 63% of patients achieved improved or markedly improved neurological status vs. 20% with standard treatment.

- The 2021 bladder cancer study: 52 patients post-surgery. Adding DMSO to chemotherapy reduced relapse rates by approximately 50%.
- The Vacaville prison safety trials: DMSO administered at 3–30 times standard dosage daily for 90 days. No toxicity observed.
- The Russian scleroderma study: 58 patients. Disease progression stopped in 96.6%. Clinical recovery in 34 of 40 patients with plaque scleroderma. No relapses during five-year follow-up.
- The 1,371-patient skin disorder study: Including 173 with second or third-degree burns. 95.04% complete recovery rate using DMSO spray.

Specific citations for individual studies are provided within the relevant Q&A sections of the main text.